Herbicidally activ Arabidopsis thalia Arabidopsis thalia Herbicidally activ

Title: Perfect score:

Sequence:

protein

ü

Run

Scoring table:

Minimum DB Maximum DB

Database

Word size

Searched:

```
AAG51581
AAB92475
AAG24387
ABB92445
AAB92448
AAG51580
AAG24386
AAG24386
AAG51575
AAG51575
AAG51575
AAG51575
AAG51575
AAG51575
AAG51575
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAG31819
AAG41219
AAG31816
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAG31818
AAU35004
ABB91950
ABB52552
AAR66734
AAG41218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAG83109
ABB39494
AAB36990
AAW15759
AAM98140
AAY54417
AAW67814
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAG73567
AAU56954
ABG15280
AAG54858
AAU38160
ABB92146
              AAG18620
AAG18619
AAG18619
AAF1419
AAF00547
AAG205525
AAG205526
AAG205525
AAG205526
AAG205526
AAG205526
AAG31059
AAG31059
AAG31059
AAG31095
AAG3109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ABG80409
AAR61478
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAG07592
AAR61477
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ABG29708
AAW71471
ABG96551
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAY55986
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAB96397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAE07914
\begin{array}{c} 288 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\ 287 \\
 Secolsolariciresin
Secolsolariciresin
Secolsolariciresin
Secolsolariciresin
Secolsolariciresin
Secolsolariciresin
Secolsolariciresin
Trypsin fragment o
Arabidopsis thalia
                                                                                                   ; Search time 83 Seconds (without alignments) 522.077 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       results predicted by chance to have a loo the score of the result being printed, of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                  273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Description
                                                                                                                                                             US-09-673-918A-2
273
1 MQLRTAFARRLEGKVALITG......IDGGFSVCNSVIKVFQYPDS
              GenCore version 5.1.6
(c) 1993 - 2003 Compugen Ltd
                                                                                                                                                                                                                                                                                                                               Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                      1107863 segs, 158726573 residues
                                                                        protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAYS4412
AAYS4420
AAYS4413
AAYS4414
AAYS4416
AAOS1494
AAYS4418
AAYS4418
                                                                                                      2003, 12:51:30
                                                                                                                                                                                                                          OLIGO
Gapop 60.0 , Gapext 60.0
                                                                                                                                                                                                                                                                                                                                                                                                            Post-processing: Listing first 1000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Pred. No. is the number of res
score greater than or equal to
and is derived by analysis of
                                                                                                                                                                                                                                                                                                                                                              seq length: 0
seq length: 200000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              273
272
277
277
276
276
276
277
278
                            Copyright
                                                                                                      October 23,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           272
272
110
34
34
34
17
```

Trypsin fragment on Human ORFX protein Arabidopsis thalia Streptococcus poly Arabidopsis thalia Herbicidally activ Herbicidally activ Arabidopsis thalia Herbicidally activ Arabidopsis thalia S. clavuligerus old S. clavuligerus old Arabidopsis thalia Arabidopsis dihydrodia Arabidopsis thalia Arabidopsis dihydrodia

A. calcoaceticus a Cotton fibrous tis Human peptide #141 N-terminal fragmen Human secreted pro Streptococcus poly Human colon cancer

epidermidis ope Staphylococcus epi

Propionibacterium Novel human diagno Arabidopsis thalia Salmonella typhi c Herbicidally activ

Score

Š. Result

26456789

Streptococcus poly Human G protein-co Novel G protein co Extended human sec

Translation from r Streptococcus poly Novel human diagno ERAB protein. Hom Human short chain

ji U

Streptococcus pneu S. pneumoniae SP10 Amino acid sequenc Arabidopsis thalia Novel human diagno Zea mays protein f Zea mays protein f Zea mays protein C glutamicum prote Humanised MAb heav Mature heavy chain Humanised MAb heav Humanised MAb heav Human ORFX ORF938 Arabidopsis thalia Human liver peptid Peptide #5541 enco Peptide #541 enco Peptide #5489 enco Human popytide enco Human popytide enco Human popytide #500 enco Human popytide #500 enco Human popytide #5489 enco Human popytide #500 enco	PRRSV Levygrada Okr PRRSV isolate Tole Protein N of PRRSV Human liver peptid Propionibacterium Human brain expres Peptide #12403 enc Porcine reproducti PRRS virus ORF7 pr Human peptide enco Porcine reproducti Amino acid sequenc Propionibacterium Human endocrine po Zea mays protein f Drosophila melanog Cagi locus product H. pylori putative Parietaria sp. all Human RNA polymera Altered staphyloki Staphylokinase der Staphylokinase der Staphylokinase der Staphylokinase der Staphylokinase der Staphylokinase der Staphylokinase der Staphylokinase der Staphylokinase der
111 19 AAW61227 112 20 AAY36822 113 21 AAG15003 113 22 AAG15003 114 21 AAG15003 117 22 AAM23594 117 22 AAM23594 117 22 AAM23594 118 22 AAG12552 119 22 AAM32243 119 14 AAR32243 119 14 AAR32243 119 14 AAR32243 119 14 AAR32243 119 22 AAG1451 121 22 AAG1451 122 21 AAG61092 123 21 AAG8141 123 21 AAG8144 124 22 AAR39152 125 21 AAG1640 123 21 AAG1640 123 21 AAG1640 123 21 AAG1640 124 22 AAG1174 126 21 AAY75509 127 22 AAG12354 126 21 AAY75509 127 22 AAG12354 127 22 AAG12354 127 22 AAG1171 127 22 AAG18909 127 22 AAM11909 127 22 AAM11909 127 23 AAG1968 128 13 AAR29946 128 13 AAR29946	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
Peptide #2583 enco Human peptide enco Human peptide enco Human ORFX protein ERA binding domain Arabidopsis thalia Human hiver peptid Propionibacterium Peptide #1181 enc Human haematologic Human haematologic Arabidopsis thalia Propionibacterium Propionibacterium Arabidopsis thalia Propionibacterium Human ORFX protein Propionibacterium Human ORFX protein Propionibacterium Propionibacterium Propionibacterium Human CORN protein Propionibacterium Propionibacterium Human CORO cancer Propionibacterium Propionibacterium Human CORO cancer Propionibacterium	Arablodopsis thalia Arablodopsis thalia Arablodopsis thalia Human ORFX protein Novel human diagno Human ORFX protein Human ORFX protein Human ORFX ORF428 Propionibacterium Lactococcus lactis Novel human plucose tran Novel human plucose tran Novel human plucose tran Novel human ORFX protein Human ORFX protein Human ORFX protein Flock house virus Parietaria judaica Propionibacterium Propionibacterium Human haematologic Arabidopsis thalia Zea maya protein f Fragment of Sak ge Sequence homologou Protein fragment e Human ORFX protein
6 2.2 62 2 AAM03301 6 2.2 62 23 ABG37912 6 2.2 63 23 ABG37912 6 2.2 63 22 AAG9362 6 2.2 63 22 AAG9362 6 2.2 65 21 AAG56892 6 2.2 66 21 AAG56892 6 2.2 66 21 AAG56892 6 2.2 67 22 AAB94175 6 2.2 67 22 AAB94175 6 2.2 68 22 AAB94175 6 2.2 69 21 AAG10911 6 2.2 70 22 AAB41957 6 2.2 70 22 AAB41957 6 2.2 77 22 AAB12269 6 2.2 75 22 AAB5912 6 2.2 75 22 AAB5912 6 2.2 75 22 AAB591663 6 2.2 75 22 AAB591663 6 2.2 76 21 AAG10911 6 2.2 78 22 AAU4430 6 2.2 78 22 AAU4576 6 2.2 78 22 AAU45776 6 2.2 78 22 AAU56180 6 2.2 78 22 AAU56180 6 2.2 88 22 AAG75788 6 2.2 84 23 AAG75788 6 2.2 84 23 AAG75788 6 2.2 84 23 AAG75788 6 2.2 84 23 AAG75788 6 2.2 89 23 AAG75788 7 8 8 20 AAG75788	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
25000000000000000000000000000000000000	22222222222222222222222222222222222222

Staphylokinase var Staphylokinase var Staphylokinase var Staphylokinase var Staphylokinase var	Staphylokinase var Staphylokinase var	staphylokinase var Staphylokinase var	Staphylokinase var	Staphylokinase var	Staphylokinase var	Staphylokinase var	Staphylokinase var Staphylokinase var	Staphylokinase var	Staphylokinase var	Staphylokinase var Staphylokinase var	Staphylokinase var	Staphylokinase var	Staphylokinase var	Staphylokinase var	Staphylokinase var	Staphylokinase var	Staphylokinase var	Staphylokinase var Staphylokinase var	Staphylokinase var	Staphylokinase var	Staphylokinsee var	Staphylokinase var	Staphylokinase var	Staphylokinase var	Staphylokinase var	S. aureus staphylo	Staphylococcus aur	Arabidopsis thalia	Arabidopsis thalia	Arabidopsis thalia	Arabidopsis thalia	Arabidopsis thalia	Arabidopsis thalia	Arabidopsis thalla Arabidopsis thalla	Wild type staphylo	Staphylococcus pla	Staphylococcus aur Staphylokinase (Sa	S. aureus staphylo	S. aureus staphylo	Human dipeptide am	Sak giucokinase. Stanhvlokinase SAK	Staphylokinase SAK	Staphylokinase SAK	Staphylokinase SAK	Staphylokinase SAK	Flea saliva protei	TIES SALIVA DIOLEI				
20 AAY15049 20 AAY15050 20 AAY15060 20 AAY15061 20 AAY15037																																																			
136 136 136 136 136	36	9 9	36	30	9 9	36	36	36	99	e e	36	36	9 0	9 V	o vo	36	9 0	90	36	36	ם ע	9 9	36	36	9 0	9 9	36	36	ם ע א פ	36	36	9 9 9 6	36	36	ם ע יי	36	36	9 P	36	36	9 7	3 6	36	36	3.6	7 6	37	37	7 1	٠ ر د د	7.
,,,,,,,																													•					•			•			•	•		•	•	•			•	•	•	•
4 4 4 4 4 4 4 4 4 4 8 6 5 5 0 1 5 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	453	455 456	457	4 4 5 5 6	460	462	463	465	466	468	469	470	471	472	474	475	476	478	479	480	481	483	484	485	984	4 4 0 4 0 4 0 4	489	490	4 4 1 6 4 1 C 6	493	494	4 4 9 0 0 0	497	866	4 T	501	502	503 504	505	506	507 708	0 0 G	510	511	512	515	515	516	517	n n	7 T A
Staphylokinase der Staphylokinase der Staphylokinase der Staphylokinase der Staphylokinase der	taphý taphy	taphy	caphy	caphy	ild-t	taphy	taphy	caphy	taphy	caphy caphy	caphy	taphy	taphy	taphy	Lapuy	ild-t	taphy	caphy	taphy	taphy	taphy	taphy	taphy	taphy	taphy	tapny	taphy	taphy	taphy	akSTA	taphy	rapny aksta	taphy	akSTA	aksia	Staphy	akSTA	taphy	taphy	taphy	taphy	taphy	taphy	taphy	taphy	taphy	taphy	taphy	taphy	tapny	taphy
AAW03097 Staphy AAW03001 Staphy AAW03074 Staphy AAW03075 Staphy AAW03076 Staphy	AAW03095 Staphy AAW03096 Staphy	AAW03098 Staphy AAW03099 Staphy	AAW03100 Staphy	AAW03101 Stapiny AAW03102 Staphy	AAW03071 Wild-t	AAW03072 Stapiny	AAW03093 Staphy	AAW03094 Staphy	AAW03103 Staphy	AAW03104 Staphy AAW03087 Staphy	AAW03088 Staphy	AAW03089 Staphy	AAW03091 Staphy	AAW03092 Staphy	AAMUSUS4 AAMUSUS4	AAW03086 Wild-t	AAW03027 Staphy	AAWUSUZB AAWUSUZB Stanhv	AAW03030 Staphy	AAW03031 Staphy	AAW44689 Staphy	AAW44690 Staphy	AAW44691 Staphy	AAW44692 Staphy	AAW44693 Staphy	AAW44694 AAW44695 Stanhv	AAY15078 Staphy	AAY15079 Staphy	AAY15080 Staphy	AAY15062 SakSTA	AAY15063 Staphy	AAY15064 Stapny AAY15065 SakSTA	AAY15066 Staphy	AAY15067 SakSTA	AAYISU68 SAKSIA	AAY15070 . Staphy	AAY15071 SakSTA	AAY15072 Staphy AAY15073 Staphy	AAY15074 Staphy	AAY15075 Staphy	AAY15076 Staphy	AAY15031 Staphy	AAY15042 Staphy	AAY15056 Staphy	AAY15043 Staphy	AAIISU44 AAV15057 Stanby	AAY15045 Staphy	AAY15046 Staphy	AAY15058 Staphy	AAYI5047	AAY15048 Staphy
Staphy Staphy Staphy Staphy Staphy	36 17 AAW03095 Staphy 36 17 AAW03096 Staphy	36 17 AAW03098 Staphy 36 17 AAW03099 Staphy	36 17 AAW03100 Staphy	36 17 AAW03101 SCAPHY 36 17 AAW03102 Staphy	36 17 AAW03071 Wild-t	36 I/ AAW030/2 36 I/ AAW03073 Staphy	36 17 AAW03093 Staphy	36 17 AAW03094 Staphy	36 17 AAW03103 Staphy	36 17 AAW03104 Staphy 36 17 AAW03087 Staphy	36 17 AAW03088 Staphy	36 17 AAW03089 Staphy	36 17 AAW03091 Staphy	36 17 AAW03092 Staphy	36 I/ AAMU3U84 SCADIIY 36 17 AAMU3U85 STADHV	36 17 AAW03086 wild-t	36 17 AAW03027 Staphy	36 17 AAWU3028 SCADIIY 36 17 AAWU3029 SCADIV	36 17 AAW03030 Staphy	36 17 AAW03031 Staphy	36 19 AAW44689 Staphy	36 19 AAW44690 Stabhy	36 19 AAW44691 Staphy	36 19 AAW44692 Staphy	36 19 AAW44693 Staphy	36 19 AAW44694 SCADNY	36 20 AAY15078 Staphy	36 20 AAY15079 Staphy	36 20 AAY15080 Staphy	36 20 AAY15062 SakSTA	36 20 AAY15063 Staphy	36 20 AAY15064 Stapny 36 20 AAY15065 SakSTA	36 20 AAY15066 Staphy	36 20 AAY15067 SakSTA	36 ZU AAYISU68 SAKSTA	36 20 AAY15070 . Staphy	36 20 AAY15071 SakSTA	36 20 AAY15072 Staphy 36 20 AAY15073 Staphy	36 20 AAY15074 Staphy	36 20 AAY15075 Staphy	36 20 AAY15076 Staphy	36 20 AAY15031 Staphy	36 20 AAY15042 Staphy	36 20 AAY15056 Staphy	36 20 AAY15043 Staphy	36 20 AAIIS044 36 20 AAV15057 Stanby	36 20 AAY15045 Staphy	36 20 AAY15046 Staphy	36 20 AAY15058 Staphy	36 20 AAY15047	36 20 AAY15048 Staphy
36 17 AAN03097 Staphy AAN03081 Staphy 36 17 AAN03074 Staphy 36 17 AAN03075 Staphy 36 17 AAN03076 Staphy 36 17 AAN03076 Staphy	2 136 17 AAW03095 Staphy 2 136 17 AAW03096 Staphy	2 . 136 17 AAW03098 Staphy. 2 . 136 17 AAW03099 Staphy	2 136 17 AAW03100 Staphy	2 136 17 AAW03101 SCADIN	2 136 17 AAW03071 Wild-t	2 136 17 AAW03073 Staphy	2 136 17 AAW03093 Staphy	2 136 17 AAW03094 Staphy	2 136 17 AAW03103 Staphy	.2 136 17 AAW03104 Staphy .2 136 17 AAW031087 Staphy	2 136 17 AAW03088 Staphy	2 136 17 AAW03089 Staphy	2 136 17 AAW03091 Staphy	.2 136 17 AAW03092 Staphy	.z 136 1/ AAW03084 Staphy	2 136 17 AAW03086 wild-t	.2 136 17 AAW03027 Staphy	.z 136 17 AAWO3028 Staphy	.2 136 17 AAW03030 Staphy	2 136 17 AAW03031 Staphy	.2 136 19 AAW44689 Staphy	.2 136 19 AAW44690 Staphy	.2 136 19 AAW44691 Staphy	.2 136 19 AAW44692 Staphy	.2 136 19 AAW44693 Staphy	.2 136 19 AAW44694 staphy	.2 136 20 AAY15078 Staphy	.2 136 20 AAY15079 Staphy	.2 136 20 AAY15080 Staphy	.2 136 20 AAY15062 SakSTA	.2 136 20 AAY15063 Staphy	.2 136 20 AAY15064 Staphy .2 136 20 AAY15065 SakSTA	.2 136 20 AAY15066 Staphy	.2 136 20 AAY15067 SakSTA	.2 I36 20 AAYI5068 SAKSIA	.2 136 20 AAX15070 . Staphy	.2 136 20 AAY15071 SakSTA	.2 136 20 AAY15072 Staphy .2 136 20 AAY15073 Staphy	.2 136 20 AAY15074 Staphy	.2 136 20 AAY15075 Staphy	.2 136 20 AAY15076 Staphy	.2 136 20 AAY15031 Staphy	.2 136 20 AAY15042 Staphy	.2 136 20 AAY15056 Staphy	.2 136 20 AAY15043 Staphy	.z 136 zu AAIISU44 2 136 20 AAY15057 Stanby	.2 136 20 AAY15045 Staphy	.2 136 20 AAY15046 Staphy	.2 136 20 AAY15058 Staphy	.2 136 20 AAY15047 Staphy	.2 136 20 AAY15048 Staphy

Peptide #3787 enco Arabidopsis thalia Arabidopsis thalia Arabidopsis thalia Corynebacterium gl Thermally stable c Staphylokinase som Yeast cytosine-dea Arabidopsis thalia Human secreted pro- Chimeric cytosine Chimeric cytosine Chimeric cytosine Chimeric cytosine Chimeric cytosine Chimeric cytosine Listeria monocytog S. aureus Staphylok Staphylokinase SAK Staphylokinase SAK Staphylokinase RGD Glucokonkinase RG	Human colon cancer E. coli Lac-YHI-Sa Arabidopsis thalia Novel human diagno S. pneumoniae deri Streptococcus pneu S. pneumoniae type Propionibacterium Arabidopsis thalia Arabidopsis thalia Human protein sequ Human colon cancer Arabidopsis thalia C glutamicum prote Corynebacterium gl Human secreted pro Propionibacterium Human polypeptide Lactococcus lactis Lactococcus lactis Lactococcus lactis Lactococcus lactis Arabidopsis thalia Human GTPase assoc Human GTPase assoc Human GTPase assoc Human GTPase assoc Human pancreatic C Human pancreatic C Human pancreatic
6 2.2 156 22 AAMO5105 6 2.2 157 21 AAG51262 6 2.2 157 21 AAG51262 6 2.2 157 21 AAG51262 6 2.2 158 12 AAR76185 6 2.2 158 12 AAR76142 6 2.2 158 21 AAY55101 6 2.2 158 21 AAY55101 6 2.2 158 21 AAY55101 6 2.2 158 21 AAY55101 6 2.2 163 13 AAR28844 6 2.2 163 13 AAR28844 6 2.2 163 13 AAR28844 6 2.2 163 13 AAR28846 6 2.2 163 13 AAR28846 6 2.2 163 13 AAR28846 6 2.2 163 21 AAR755104 6 2.2 164 18 AAR755106 6 2.2 164 18 AAR755106 6 2.2 164 21 AAG78160 6 2.2 164 21 AAG78160 6 2.2 164 21 AAG78161 6 2.2 164 21 AAG78161 6 2.2 165 21 AAG78164 6 2.2 166 21 AAG78164 6 2.2 166 21 AAG78164 6 2.2 170 22 AAB678341 6 2.2 170 22 AAB678341 6 2.2 170 22 AAB678341 6 2.2 170 22 AAB678367 6 2.2 176 23 AAG95031 6 2.2 176 23 AAG95031	2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2
okinase gen c Mab heavy c Mab heavy c Mab heavy c Mab heavy wman diagno uman diagno uman diagno man diagno heavy chain heavy chain d of the ecreted pro ecreted p	
Staph Chips BR55.c BR55.c C 91.l Humar Humar Humar Arabbi Arabbi Arabbi Arabbi Arabbi Arabbi Humar	Arabidopsis Arabidopsis Rat myolin Arabidopsis AgfA:: PT3#8 Arabidopsis Human immun Human polyp Arabidopsis
C 2.2 137 20 AAY15001 C 2.2 138 14 AAR32246 C 2.2 138 22 ABG26008 C 2.2 138 22 ABG26008 C 2.2 138 22 AAG26008 C 2.2 138 22 AAG26008 C 2.2 138 22 AAG32884 C 2.2 139 14 AAR31588 C 2.2 140 21 AAR31588 C 2.2 141 21 AAR31588 C 2.2 144 22 AAG31273 C 2.2 145 21 AAG31273 C 2.2 145 21 AAG31273 C 2.2 145 21 AAG31273 C 2.2 146 22 AAR31689 C 2.2 146 22 AAR31689 C 2.2 146 22 AAR31686 C 2.2 148 22 AAR31666 C 2.2 148 22 AAR3166681 C 2.2 148 24 ABU166081 C 2.2 148 24 ABU166788 C 2.2 148 24 ABU16578	2.2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	568 570 571 571 572 573 573 573 573 573 573 573 573 573 573

03	ABB30559 ABB35724 ABB21150	653 891	673	445	1124	396	5604	131	3951	3114	0012	333	742	3124	3337	5903	5334	2953	1352	1993	1431 5344	1939	5431	3053	2856	831	1384	1527	1957	752	5533	3573	3302	1524	1322	9006	1067	2890	3884	1587	2734	1839	5442	3450	3453 222	855	1096	9654 0187	5549
20	222	22	22	22	23	24	22	23	21	19	4 4	22	23	7 7	22	7 6	22	22	22	22	7 7 7 7	13	7 7	23	23	22	21	21	25	23	22	22	23	23	21	10	12	7 7 7	21	23	23	20	21	22	25	22	23	2 4	18
6:12	203	00	00	00	00	00	0	0	00	н.	-		-1 -	10	2	40	2	2 0	10	0 0	4 N	20	າຕ	m (mm	3 (mr	າຕ	9	າ ຕ	3	m	2	3	4. 4	7	4.	44	4	4 4	4	4. 4	4 4	4.	4. 4	1 4	4.4	44	4
14:5	000																																		•										•				
t 23	999	9 9	9 9	9 4	9	y y	9	6	ى م	9	ωv	9	φı	oω	9	ρv	9	φų	9	9 (o vo	6	و و	6	φ¢	9	19 14	9	94	øφ	94	o vo	φ¢	9	φų	ο φ	ψı	oφ	9	φų	φ	φų	φ	91	ωv	o vo	9 4	o y	9
O																																																	
Thu	667 668 669	77	P P	7.	- 1	r r	- 1	നാ	മമ	œ	ന ന	8	00 0	മെ	0	ת ס	σ	0 0	J O	OU C	ש ע	0	00	0	\circ	0	00	0	-		4 -	1 ~1	~ ~	1 ~1	- C	2 6	2	NO	N.	S O	10	2	าค	€ (ოო	າຕ	സ	ກຕ	(1)
																											-																						•

Human ORFX ORF3125 Arabidopsis thalia Human acid sequenct Short-chain dehydr 21615 APH. Home s Human Pro peptide Human 21615 alcoho Actinomadura hibis Human gastric canc Arabidopsis thalia Drosophila melanog Putative P. abyssi Streptococcus poly Lactobacillus kefi Chlamydia pneumoni Drosophila melanog Putative P. abyssi Streptococcus poly Arabidopsis thalia Arabidopsis thalia Arabidopsis thalia Arabidopsis thalia Drosophila melanog E. coli cellular p Salmonella typhi Chlamydia melanog Crosophila melanog Rabidopsis thalia Arabidopsis thalia Arabidopsis thalia Arabidopsis thalia Arabidopsis thalia Arabidopsis thalia Arabidopsis thalia Altheimer-associat Human bora marrow Peptide #450 enco	Lactobacillus kefi Human nucleic acid Arabidopsis thalia Arabidopsis thalia Arabidopsis thalia Arabidopsis thalia Arabidopsis thalia Arabidopsis thalia Arabidopsis thalia Human pectein clon Human pectein clon Human secreted pro Novel human secret Novel human s
245 21 AAB43361 245 22 AAB43692 245 22 AAB43692 245 22 AAB43692 245 22 AAB43692 245 23 AB634369 246 21 AAV51422 246 21 AAV51422 247 22 AAB663575 247 22 AAB663575 247 22 AAB663575 247 22 AAB663575 247 22 AAB663575 247 22 AAB663575 251 20 AAV13469 251 22 AAB66231 253 22 AAB66231 254 22 AAB66231 255 22 AAB66231 257 22 AAB73020 257 22 AAB73020 258 22 AAB73020 258 22 AAB73020 259 22 AAB73020 250 23 AAB22015 260 23 AB22015 261 22 AB869111	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
44444444444444444444444444444444444444	
Peptide #3210 enco Peptide #3210 enco Protide #323 enco Human brain #329 enco Human bone marrow Peptide #312 enco Peptide #3137 enco Peptide #3137 enco Peptide #3137 enco Human nevicate enco Human prostate can Drosophila melanog Human prostate can Drosophila melanog Human protein Novi S. epidermidis ope Arabidopsis thalia Novel human enzyme Human novel polype Thymidylate syntha Novel human encyme Human polypeptide Drosophila melanog C glutamicum prote Human polypeptide Drosophila melanog C glutamicum prote Human polypeptide Drosophila melanog Prosophila melanog Arabidopsis thalia Novel human calciu Arabidopsis thalia Drosophila melanog Prosophila melanog Rreptococcus poly Streptococcus poly Streptococcus poly Arabidopsis thalia Drosophila melanog Human cancer assoc Novel human enzyme Protein fragmen Fropionibacterium Streptococcus poly Arabidopsis thalia Propionibacterium Human protein sequ Human RNA metaboli Arabidopsis thalia Bridobacterium lo N terminal sequenc	Pragellin exceets Reast and ovarian Arabidopsis thalia Human Birk binding Lactococcus poly Human prostate can Streptococcus poly Runan prostate can Streptococcus pneu Anino acid sequenc E. coli cellular p B. coli cellular p Salamonalla typhi c Human novel typhi c Human novel cytcki Poly3-hydroxybutan Human short chain S. pneumoniae type H. pylori ORP 01ge
Peptide #3210 enco 22 ABE31559 22 ABE31550 23 AAM68315 24 ABE315150 25 AAM68315 26 AAM68315 27 AAM68315 28 AAM68315 29 AAM68315 20 AAM68315 20 AAM68315 20 AAM68316 20 AAM68316 20 ABE3166 20 AAM68316 20 AAM68316 20 ABE3166 20 ABE3166 20 AAM68317 20 ABE3167 21 ABE3167 22 AAM88141 24 ABE3167 25 AAM88114 26 AAM88114 27 AAM88114 28 AAM88114 29 AAM88114 20 AAM88114 21 AAM88114 22 AAM88114 23 AAM88114 24 AAM88114 25 AAM88114 26 AAM88114 27 AAM88114 28 AAM88114 29 AAM88114 20 AAM88114 21 AAM88114 22 AAM88114 23 AAM88114 24 AAM88114 25 AAM88114 26 AAM88114 27 AAM88114 28 AAM88114 29 AAM88114 20 AAM88114 21 AAM88114 22 AAM88114 23 AAM88114 24 AAM88114 25 AAM88114 26 AAM88114 27 AAM88114 28 AAM88114 29 AAM88114 20 AAM88114 21 AAM88114 22 AAM88114 23 AAM88114 24 AAM88114 25 AAM88114 26 AAM88114 27 AAM88114 28 AAM88114 29 AAM88114 20 AAM88114 20 AAM88114 21 AAM88114 22 AAM88114 23 AAM88114 24 AAM88114 25 AAM88114 26 AAM88114 27 AAM88114 28 AAM88114 29 AAM88114 20 AAM88114 21 AAM88114 22 AAM88114 23 AAM88114 24 AAM88114 25 AAM88114 26 AAM88114 27 AAM88114 28 AAM88114 29 AAM88114 20 AAM88114 20 AAM88114 21 AAM88114 22 AAM88114 23 AAM88114 24 AAM88114 25 AAM88114 26 AAM88114 27 AAM88114 28 AAM88114 29 AAM88114 20 AAM88114 20 AAM88114 21 AAM88114 22 AAM88114 23 AAM88114 24 AAM88114 25 AAM88114 25 AAM88114 26 AAM88114 27 AAM88114 28 AAM88114 29 AAM88114 20 A	12

Lactococcus lactis Arabidopsis thalia	Arabidopsis thalia Streptococcus pneu	Bifidobacterium lo	Human ORFX ORF2665	Human olfactory re	Human G-protein co	Human polypeptide Lactococcus lactis	Enterococcus faeca	Helicobacter pylor	Helicobacter pylor Unman Mad Vinsed n	Human protein SEO	Lactococcus lactis	Salmonella enteric	Chlamydia pneumoni	Rape leaf beta-ket	Rape seed beta-ket	Arabidopsis thalia	Mycoplasma pneumon	Bifidobacterium lo	Human prostate spe Arabidonsis thalia	Arabidopsis thalia	MAP kinase phospha	Murine liver p32 1	S. aureus hydroxic	Arabidopsis thalia	Propionibacterium	Listeria monocytog	Arabidopsis thalia	Human prostate tum Arabidonsis thalia	Human polypeptide	Helicobacter pylor	Helicobacter pylor	Polypeptide isolat	human oliactory re Corvnebacterium ql	Human GPCR polypep	Human Olfactory an	Human G-protein co	H. pylori cytoplas	Scapny recoccus aug Drosophila melanod	Staphylococcus aur	Human cancer assoc Arabidonsis thalia	Arabidopsis thalia	Human transmembran	H. pylori cytoplas	Human FLEXHT-35 pr	Human granulocytic	Staphylococcus aur	Staphylococcus aur	Human polypeptide Human polypeptide	Human protein HP10	Human protein segu Human protein segu	RNA me	Novel human secret
886 6 2.2 302 23 ABB55540 887 6 2.2 304 21 AAG10125	6 2.2 304 21	6 2.2 307 23	6 2.2 308 21	6 2.2 309 22	6 2.2 309 23	6 2.2 309	6 2.2 310 22	6 2.2 311 23	6 2.2 311 23	6 2.2 313 23	6 2.2 313 23	6 2.2 314 20	6 2.2 314 23	6 2.2 315 17	6 2.2 315 17	6 2.2 315 19 6 2.2 315 21	6 2.2 315 23	6 2.2 316 23	6 2.2 316 23	6 2.2 317 21	6 2.2 317 23	6 2.2 318 18	6 2.2 318 20	6 2.2 319 21	6 2.2 320 22	6 2.2 320 23	6 2.2 321	6 2.2 322 20	6 2.2 322 23	6 2.2 323 22	6 2.2 323 23	6 2.2 325 20	6 2.2 325 22	6 2.2 325 23	6 2.2 325 23	6 2.2 325 24	6 2.2 326 18	6 2.2 326 21	6 2.2 326 23	6 2.2 327 21	6 2.2 328 21	6 2.2 328	6 2.2 330 18	6 2.2 330 22	6 2.2 331 19	6 2.2 332 20	6 2.2 332 20	6 2.2 332	6 2.2 332 22	6 2.2 332 22	6 2.2 332 23 AAE15	6 2.2 333 22 AAU30
Acetyl-CoA reducta B.burgdorferi stra	B31/PGau outer sur B. buradorferi str	psis tha	Borrelia strain PG	Outer surface prot	Outer surface prot	Human polypeptide Ramonlanin biogont	Arabidopsis thalia	Drosophila melanog	Human protein sequ	Human diaqnostic a	Streptococcus poly	Arabidopsis thalia	Herbicidally activ	PRO1800, a Hep27 h	Short chain alcoho	Human protein sequ Human PRO1800 polv	Novel human secret	Human secreted pro	Human PRO1800 poly	Human PRO1800 poly	C glutamicum prote	Arabidopsis thalia	Human protein segu	Lactococcus lactis	Group B Streptococ	Drosophila melanoq	Drosophila melanog	Propionibacterium Stanhvlococcus aur	Sialic acid-bindin	B. burgdorferi str	S. epidermidis ope	C1-inhibitor. Uni	T. gondii immunoge T. gondii immunoge	T. gondii immunoge	T. gondii immunoge	N. gonorrhoeae ami	K. aestuarii carbo	C glucamicum proce Stanhvlococcus aur	S. epidermidis ope	Drosophila melanog	Listeria monocytog	Aspergillus fumiga Desudomonas astrici	Corvnebacterium q1	acterium	ococcus ep	A gyrase process s Chlamydia pneumoni	uarii	C glutamicum prote Human AFP protein	uman e	Novel signal trans	Listeria monocytog	abid
6 2.2 273 10 AAP94155 6 2.2 273 12 AAR13141	2.2 273 16 2.2 273 16	2.2 273 21	2.2 273 23	2.2 273 23	2.2 273 23	2.2 274 22	2.2 275 21	2.2 275 22	2.2 275 22	2.2 276 22	2.2 276 23	2.2 277 21	2.2 277 23	2.2 278 21	2.2 278 21	2.2 278 23	2.2 278 23	2.2 278 23	2.2 278 23	2.2 278 24	2.2 279 22	2.2 280 21	2.2 280 22	2.2 281 23	2.2 282 21	2.2 283 22	2.2 284 22	2.2 284 22	2.2 286 23	2.2 287 14	2.2 287 22	2.2 288 9	2.2 288 20	2.2 288 22	2.2 288 22	2.2 290 24	2.2 292 21	2.2 293 22	2.2 293 22	2.2 294 22	2.2 294 23	2.2 294 24	2.2 295 22	2.2 295 22	2.2 295 23	2.2 296 20	2.2 296 21	2.2 296 22	2.2 297 22	2.2 297 22	2.2 300 23	2.2 301 21

```
Human PRO1072 prot
Human PRO1072 (UNO
Human PRO polypept
Helicobacter pylor
Human PRO1072 prot
Human PRO1072 prot
Human Secreted/tra
Human PRO polypept
Human PRO polypept
Human PRO polypept
Human PRO polypept
Human Secreted/tra
Human Secreted/tra
NS1-ACA1 fusion pr
Saccharomyces cere
Mouse FosB2. Mus
Saccharomyces cere
Mouse ischaemic co
Amino acid sequenc
Human secreted pro
Saccharomyces cere
Novel human ecereted pro
Saccharomyces cere
Novel human diagno
Amino acid sequenc
Helicobacter pylor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Helicobacter pylor S. ocrevisiae BAX-
Nerbicidally activ Synthetic amino ac Sequence encoding Influenza type B H Influenza type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Secoisolariciresinol dehydrogenase; lignan biosynthetic pathway; lignan, matairesinol; health-protecting lignan; phytoeetrogen; enterolactone; enterodiol; neutriceutical; dietary supplement; (-)-trachelogenin; antiviral; (-)-bodophyllotoxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Secoisolariciresinol dehydrogenase protein clone DEHY133.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ALIGNMENTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAY30893
AAY05771
AAY05771
AAG63567
AAG63197
ABB93772
AAG63188
AAC218
AAC218
AAC51869
AAC51853
AAC51853
AAC51853
AAC51853
AAC51853
AAC51853
                                                                                                                                                                                                                                                                                                                                                                                                                                       AAY58001
ABB57357
AAG66011
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAY54412 standard; Protein; 273 AA
(first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     06-APR-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAY54412;
9959
99610
99610
99610
99610
99610
99610
99610
99610
99610
99610
99610
99610
99610
99610
99610
99610
99610
99610
```

```
99WO-US08975
                                                     98US-0082977
                                  Forsythia intermedia.
                                      W09955846-A1
                                                23-APR-1999;
```

(UNIW) UNIV WASHINGTON STATE RES FOUND.

```
The present sequence represents a secoisolariciresinol dehydrogenase protein. The enzyme is involved in the lignan biosynthetic pathway.

The secoisolariciresinol dehydrogenase proteins have a molecular weight of 27-31 KDa, an isoelectric point of 5.9-6.85, and require weight of 27-31 KDa, an isoelectric point of 5.9-6.85, and require weight of 27-31 KDa, an isoelectric point of 5.9-6.85, and require weight of 27-31 KDa, an isoelectric point of 5.9-6.85, and require weight of 27-31 KDa, an isoelectric point of 5.9-6.85, and require not not not a considerable of the enzymes.

The secoisolariciresinol dehydrogenase in plants or to alter lignan of secoisolariciresinol dehydrogenase in plants or to alter lignan of secoisolariciresinol dehydrogenase or proteins and mucleic acids can be utilized to: elevate or otherwise atter the levels of health-protecting lignans, including phytosetrogens atter the acents of neutrodoil, in plant species, including phytosetrogeners are enterolactone and enterodiol, in plant species, including material estables, grains and fruits and to food items incorporating material derived from such genetically altered plants; genetically altered plants; genetically altered plants; genetically alter plant or a variety of purposes, for example as neutriceuticals and dietary cabured from such genetically alter living organisms to produce an example (-)-trachogenin which possesses antiviral processes antiviral contraction.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61 NSTYIHCDVINEDGVKNAVDNIVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121 NVTGVFLCMKHAARVMIPARSGNISTASLSSTWGGGSSHAYCGSKHAVLALTRNLAVEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1 MOLRTAFARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61 NSTYIHCDVINEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121 NVTGVFLCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GOFGIRVNCLSPFGLPTALGKKFSGIKNEEFFENVINFAGNLKGPKFNVEDVANAALYLA
                                                                                                                          New nucleic acid molecule encoding an enzyme involved in lignan biosynthetic pathway, useful for producing large amounts of lignans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Secoisolariciresinol dehydrogenase; lignan biosynthetic pathway; lignan; matairesinol; health-protecting lignan; phytoestrogen; enterolactone; enterodiol; neutriceutical; dietary supplement;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   100.0%; Score 273; DB 21; Length 273; 100.0%; Pred. No. 1.5e-270; tive 0; Mismatches 0; Indels 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Secoisolariciresinol dehydrogenase protein clone DEHY130.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SDEAKYVSGHNLFIDGGFSVCNSVIKVFQYPDS 273
                      Lewis
                                                                                                                                                                                              Claim 8; Page 46-47; 66pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAY54420 standard; Protein; 272
                    Davin LB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local Similarity 100.
Matches 273; Conservative
                                                             WPI; 2000-126356/11.
N-PSDB; AAZ45730.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 273 AA;
                 Costa MA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          181
유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            \dot{\delta}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
```

120 120

9 9

σ

```
AAY54413;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Kia Z,
     RESULT 3
                       AAY54413
                                                                               a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                        The present sequence represents a secoisolariciresinol dehydrogenase protein. The enzyme is involved in the lignan biosynthetic pathway. The secoisolariciresinol dehydrogenase proteins have a molecular weight of 27-31 kDa, an isoelectric point of 5:9-6.85, and require NAD or NADP as a cofactor. The secoisolariciresinol dehydrogenase nucleic acids are used for the recombinant expression of the enzymes. It is also used to obtain expression or enhanced expression of secoisolariciresinol dehydrogenae in plants or to alter lignan biosynthesis. The enzyme is used for production of the pharmacologically active lignan, mateliaresinol. The secoisolariciresinol dehydrogenase proteins and nucleic acids can be utilized to: elevate or otherwise alter the levels of health-protecting lignans, including phytosetrogens such as enterolactone and enterodiol, in plant species, including charter as enterolactone and enterodiol, in plant species, including derived from such genetically altered plants; genetically alter plant species to provide an abundant, natural supply of lignans useful for a variety of purposes, for example as neutriceuticals and dietary a variety of purposes, for example as neutriceuticals and dietary abundant supply of optically alter living organisms to produce an abundant supply of optically place lignans whing desirable biological properties, for example (-) trachelogenin which possesses antiviral
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STYIHCDVINEDGVKNAVDNIVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVN 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      122 VTGVFLCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELG 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            QFGIRVNCLSPFGLPTALGKKFSGIKNEEFFENVINFAGNLKGPKFNVEDVANAALYLAS 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STYIHCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVN 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 QLRTAFARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSN 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2 QLRTAFARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                 New nucleic acid molecule encoding an enzyme involved in lignan biosynthetic pathway, useful for producing large amounts of lignans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 272;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0; Indels
(-)-trachelogenin; antiviral; (-)-podophyllotoxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               99.6%; Score 272; DB 21; I
100.0%; Pred. No. 1.6e-269;
ive 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DEAKYVSGHNLFIDGGFSVCNSVIKVFQYPDS 272
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DEAKYVSGHNLFIDGGFSVCNSVIKVFQYPDS 273
                                                                                                                                                                                                                               (UNIW ) UNIV WASHINGTON STATE RES FOUND
                                                                                                                                                                                                                                                                         Lewis NG;
                                                                                                                                                                                                                                                                                                                                                                                                                            Example 2; Page 61-63; 66pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     properties, for example (-)-trachelo;
properties, and (-)-podophyllotoxin.
                                                                                                                                                                                                                                                                     Costa MA, Davin LB,
                                                                                                                                                                                           98US-0082977
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Best Local Similarity 100.
Matches 272; Conservative
                                     Forsythia intermedia.
                                                                                                                                                                                                                                                                                                           WPI; 2000-126356/11.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           272 AA;
                                                                                                                                                                                                                                                                                                                               N-PSDB; AAZ45743
                                                                           WO9955846-A1.
                                                                                                                                                                                           24-APR-1998;
                                                                                                               04-NOV-1999,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                     Xia Z,
```

g

ò

ద

8

g ò 8 ò

ò

```
recisolaric actors are used to obtain expression of the enrymes.

It is also used to obtain expression or chanced expression of secoisolaric resinol dehydrogenase in plants or to alter lignan biosynthesis. The enryme is used for production of the pharmacologically active lignan, matairesinol. The secoisolaric resinol dehydrogenase or cutive lignan, matairesinol. The secoisolaric resinol dehydrogenase alter the levels of health-protecting lignans, including phytoestrogens such as enterolactone and enterodiol, in plant species, including vegetables, grains and fruits and to food items incorporating material derived from such genetically altered plants; genetically alter plant species to provide an abundant, natural supply of lignans useful for a variety of purposes, for example as neutriceuticals and dietary supplements; to genetically alter living organisms to produce an properties, for example (-)-trachelogenin which possesses antiviral properties, and (-)-podophyllotoxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8 ARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTYIHC 67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ARRLEGKVALITGGASGIGETTAKLFSOHGAKVAIADVODELGHSVVEAIGTSNSTYIHC 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  The present sequence represents a secoisolariciresinol dehydrogenase protein. The enzyme is involved in the lignan biosynthetic pathway. The secoisolariciresinol dehydrogenase proteins have a molecular weight of 5.9-6.85, and require NAD or NADP as a cofactor. The secoisolariciresinol dehydrogenase nucleic acids are used for the recombinant expression of the enzymes.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                New nucleic acid molecule encoding an enzyme involved in lignan biosynthetic pathway, useful for producing large amounts of lignans
                                                                                                                                                                                                                                                                                                    Secoisolariciresinol dehydrogenase; lignan biosynthetic pathway;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              68 DVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERV 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERV 121
                                                                                                                                                                                                                                                                                                                                       lignan; matairesinol; health protecting lignan; phytoestrogen; enterolactone; enterodiol; neutriceutical; dietary supplement; (-)-trachelogenin; antiviral; (-)-podophyllotoxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  40.3%; Score 110; DB 21; Length 277; 100.0%; Pred. No. 7.9e-104;
                                                                                                                                                                                                                         Secoisolariciresinol dehydrogenase protein clone SMDEHY321.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          100.0%; Pred. ...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (UNIW ) UNIV WASHINGTON STATE RES FOUND.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Lewis NG;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Claim 8; Page 49-50; 66pp; English.
Ä.
AAY54413 standard; Protein; 277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Costa MA, Davin LB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          99WO-US08975
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     98US-0082977
                                                                                                                                              (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Best Local Similarity 100. Matches 110; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Forsythia intermedia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2000-126356/11.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       277 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         N-PSDB; AAZ45731
                                                                                                                                              06-APR-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      23-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         24-APR-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WO9955846-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   04-NOV-1999.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
```

```
The present sequence represents a secoisolariciresinol dehydrogenase protein. The enzyme is involved in the ligana biosynthetic pathway. The secoisolariciresinol dehydrogenase proteins have a molecular weight of 27-31 kDa, an isoelectric point of 5.96.85, and require weight of 27-31 kDa, an isoelectric point of 5.96.85, and require but of the secoisolariciresinol dehydrogenase in concleic acids are used for the secoisolaricresinol dehydrogenase in plants or to alter ligana secoisolariciresinol dehydrogenase in plants or to alter ligana active ligana, matairesinol The secoisolariciresinol dehydrogenase proteins and nucleic acids can be utilized to: elevate or toherwise active lignan, matairesinol. The secoisolariciresinol dehydrogenase proteins and nucleic acids can be utilized to: elevate or toherwise such as enterolactons and enterodiol, in plant species, including phytoestrogens such as enterolactons and enterodiol, in plant species, including material derived from such genetically altered plants; supplements; to genetically altered plants; to produce an abundant, natural supply of liganas useful for a variety of purposes, for example as neutriceuticals and dietary supplements; for example (-) trachelogenin which possesses antiviral properties, for example (-) trachelogenin which possesses antiviral
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      New nucleic acid molecule encoding an enzyme involved in lignan biosynthetic pathway, useful for producing large amounts of lignans
                                                                                                                                                                                                     Secoisolariciresinol dehydrogenase; lignan biosynthetic pathway; lignan, matairesinol; health-protecting lignan; phytoestrogen; enterolactone; enterodel; neutriceutical; dietary supplement; (-)-trachelogenin; antiviral; (-)-podophylotoxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
12.5%; Score 34; DB 21; Length 273;
Best Local Similarity 100.0%; Pred. No. 4.2e-26;
Matches 34; Conservative 0; Mismatches 0; Indels
                                                                                                                                                             Secoisolariciresinol dehydrogenase protein clone SMDEHY431.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (UNIW ) UNIV WASHINGTON STATE RES FOUND.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Lewis NG;
                                                                                                                                                                                                                                                                                                                                                                                        'note= "encoded by GTN"
                                                                                                                                                                                                                                                                                                                                                                                                                               /note= "encoded by GTN"
                                                                                                                                                                                                                                                                                                                                              Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Claim 8; Page 51-52; 66pp; English.
                                         AAY54414 standard; Protein; 273 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Costa MA, Davin LB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     99WO-US08975
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           98US-0082977
                                                                                                                        (first entry)
                                                                                                                                                                                                                                                                                                         Forsythia intermedia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WPI; 2000-126356/11.
N-PSDB; AAZ45732.
                                                                                                                                                                                                                                                                                                                                                                   Misc-difference 120
                                                                                                                                                                                                                                                                                                                                                                                                          Misc-difference 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          273 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WO9955846-A1.
                                                                                                                        06-APR-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   23-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           24-APR-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            04-NOV-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Seguence
                                                                                 AAY54414;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Xia Z,
RESULT 4
```

```
The present sequence represents a secoisolariciresinol dehydrogenase protein. The enzyme is involved in the lignan biosynthetic pathway. The secoisolariciresinol dehydrogenase proteins have a molecular weight of 27-31 kDa, an isoelectric point of 5.9-6.85, and require the secoisolariciresinol dehydrogenase proteins and require to a cofactor. The secoisolaricresinol dehydrogenase in the salso used to obtain expression or enhanced expression of the enzymes. It is also used to obtain expression or enhanced expression of the enzymes. The enzyme is used for production of the pharmacologically active lignan, matairesinol dehydrogenase in plants or to alter lignan active lignan, matairesinol. The secoisolariciresinol dehydrogenase proteins and nucleic acids can be utilized to: elevate or otherwise context and nucleic acids can be utilized to: elevate or otherwise such as enterolactone and entercatiol in plant species, including phytosetrogenase such as enterolactone and entercatiol, in plant species, including material derived from such genetically altered plants; genetically altered plants; genetically alter plant species to provide an abundant, natural supply of lignans useful for a variety of purposes, for example as neutriculals and dietary supplements; to genetically alter living organisms to produce an abundant, natural supply of lignans useful for a variety of purposes, for example as neutriculals and dietary submidgant supply of cpically pure lignans having desirable biological properties, for example (-) tranchelogenin which possesses antiviral properties, and (-) podophyllotoxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               New nucleic acid molecule encoding an enzyme involved in lignan biosynthetic pathway, useful for producing large amounts of lignans
                                                                                                                                                                                                                                                                                   Secoisolariciresinol dehydrogenase; lignan biosynthetic pathway; lignan, matairesinol; health-protecting lignan, phytoestrogen; enterolactone; enterodiol; neutriceutical; dietary supplement; (-)-trachelogenin; antiviral; (-)-podophyllotoxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           .
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 34; DB 21; Length 276;
Pred. No. 4.3e-26;
                                                                                                                                                                                                                                               Secoisolariciresinol dehydrogenase protein clone SMDEHY631.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    93
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       63 SNSTYIHCDVTNEDGVKNAVDNTVSTYGKLDIMF 96
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     12.5%; Scor.
100.0%; Pred. No. ...
0; Mismatches
SNSTYIHCDVTNEDGVKNAVDNTVSTYGKLDIMF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 60 SNSTYIHCDVTNEDGVKNAVDNTVSTYGKLDIMF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (UNIW ) UNIV WASHINGTON STATE RES FOUND.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Costa MA, Davin LB, Lewis NG;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Claim 8; Page 56-57; 66pp; English
                                                                                                                         AAY54416 standard; Protein; 276 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     99WO-US08975
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             98US-0082977.
                                                                                                                                                                                                         (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ouery Match
Best Local Similarity 100.0
Matches 34; Conservative
                                                                                                                                                                                                                                                                                                                                                                                              Forsythia intermedia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WPI; 2000-126356/11.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             276 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         N-PSDB; AAZ45734.
                                                                                                                                                                                                                                                                                                                                                                                                                                      WO9955846-A1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     23-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             24-APR-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               04-NOV-1999.
                                                                                                                                                                                                         06-APR-2000
                                                                                                                                                                 AAY54416;
                     9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Xia Z,
                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
```

.; 0

ó

Gaps

; 0

60 SNSTYIHCDVTNEDGVKNAVDNTVSTYGKLDIMF 93

ģ

AA021494

```
recoisolaricires. Outside the properties of the pharmacologically biosynthesis. The enzyme is used for production of the pharmacologically biosynthesis. The enzyme is used for production of the pharmacologically active lighan, matairesinol. The secoisolariciresinol dehydrogenase proteins and nucleic acids can be utilized to: elevate or otherwise alter the levels of health-protecting lignans, including phycoestrogens such as enterolactone and enterodiol, in plant species, including vegetables, grains and fruits and to food items incorporating material derived from such genetically altered plants; genetically alter plant species to provide an abundant, natural supply of lignans useful for a variety of purposes, for example as neutriceuticals and dietary supplements; to genetically alter living organisms to produce an abundant supply of optically pure lignans having desirable biological properties, for example (-)-trachelogenin which possesses antiviral
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      The present sequence represents a secoisolariciresinol dehydrogenase protein. The enzyme is involved in the lignan biosynthetic pathway. The secoisolariciresinol dehydrogenase proteins have a molecular weight of 27-31 kDa, an isolactric point of 5.9-6.85, and require NAD or NADP as a cofactor. The secoisolariciresinol dehydrogenase nucleic acids are used for the recombinant expression of the enzymes. It is also used to obtain expression or enhanced expression of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               New nucleic acid molecule encoding an enzyme involved in lignan biosynthetic pathway, useful for producing large amounts of lignans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Secoisolariciresinol dehydrogenase; lignan biosynthetic pathway; lignan; matairesinol; health-protecting lignan; phytoestrogen; enterolactone; enterodiol; neutriceutical; dietary supplement;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Trypsin fragment of a secoisolariciresinol dehydrogenase protein
Secoisolariciresinol dehydrogenase; lignan biosynthetic pathway;
                       lignan; matairesinol; health-protecting lignan; phytoestrogen; enterolactone; enterodiol; neutriceutical; dietary supplement; (-)-trachelogenin; antiviral; (-)-podophyllotoxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              12.5%; Score 34; DB 21;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNS 66
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                     (UNIW ) UNIV WASHINGTON STATE RES FOUND.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     properties, for example (-)-trachelo
properties, and (-)-podophyllotoxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Claim 8; Page 54-55; 66pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ź
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAY54418 standard; Peptide; 17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           100.08;
                                                                                                                                                                                                                                                                                                                                                                                                                      Costa MA, Davin LB,
                                                                                                                                                                                                                                                                         99WO-US08975.
                                                                                                                                                                                                                                                                                                                       98US-0082977.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       06-APR-2000 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Local Similarity 100.
                                                                                                                      Forsythia intermedia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       WPI; 2000-126356/11.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             277 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 N-PSDB; AAZ45733.
                                                                                                                                                                                                                                                                                                                       24-APR-1998;
                                                                                                                                                                                                                                                                         23-APR-1999;
                                                                                                                                                                    WO9955846-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                53
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAY54418;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                    Xia Z,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Best Loca
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAY54418
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT
ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        content in seeds of a monocotyledon plant, comprising selecting at least one protein or enzyme integral to the pathway leading to G-lignan formation, stably transforming a monocotyledon plant with chimeric gene (CG) constructs having a seed-specific transcriptional regulatory region operably linked to a nucleic acid sequence encoding the enzyme. The method of the invention is useful for stably transforming a monocotyledonous plant (e.g. rice) with CG constructs resulting in increased expression of the genes encoded by CG constructs. The G-lignan enriched seed composition is useful as a food additive. This sequence represents the secoisolariciresinol dehydrogenase protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         The invention relates to a method for increasing the guaiacyl (G)-lignan
                                                                                                                                                                                                                                                                 Guaiacyl (G)-lignan; monocotyledon plant; rice; food additive;
seed-specific transcriptional regulatory region; dehydrogenase; enzyme.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Increasing guaiacyl-lignan content in monocotyledon plants, by transforming plant with chimeric gene construct having seed-specific transcriptional regulator linked to gene encoding protein involved in G-lignan formation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 12.5%; Score 34; DB 23; Length 276; 100.0%; Pred. No. 4.3e-26; ive 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Secoisolariciresinol dehydrogenase protein clone SMDEHY511.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 60 SNSTYIHCDVINEDGVKNAVDNTVSTYGKLDIMF 93
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          63 SNSTYIHCDVTNEDGVKNAVDNTVSTYGKLDIMF
                                                                                                                                                                                                                Secoisolariciresinol dehydrogenase protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (UNIW ) UNIV WASHINGTON STATE RES FOUND. (PHYT-) APPLIED PHYTOLOGICS INC.
                                                                  AAO21494 standard; Protein; 276 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAY54415 standard; Protein; 277 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Claim 2; Fig 10; 136pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         04-SEP-2001; 2001WO-US27500.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          07-SEP-2000; 2000US-230632P.
                                                                                                                                                                  15-AUG-2002 · (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  relating to the invention.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Best Local Similarity 100.
Matches 34; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Davin LB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WPI; 2002-425767/45.
N-PSDB; AAL38432.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                276 AA;
                                                                                                                                                                                                                                                                                                                                                                                          WO200220548-A1
                                                                                                                                                                                                                                                                                                                                         Unidentified.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          06-APR-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                           14-MAR-2002.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Lewis NG,
                                                                                                                 AA021494;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAY54415;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
```

ö

Gaps

ö

Length 277; Indels

4.3e-26; hes 0;

62

RESULT 7
AAY54115
ID AAY5.
XX
AC AAY5.
XX
DT 06-A
XX

ð 8 us-09-673-918a-2.oligo.rag

```
06-SEP-2000
The present sequence represents a peptide of a secoisolariciresinol dehydrogenses. The enzyme is involved in the lignan biosynthetic pathway. The secoisolariciresinol dehydrogense proteins have a molecular weight of 27-31 KDa, an isoelectric point of 5.9-6.85, and require weight of 27-31 KDa, an isoelectric point of 5.9-6.85, and require weight of 27-31 KDa, an isoelectric point of 5.9-6.85, and require weight of 27-31 KDa, an isoelectric point of 5.9-6.85, and require nucleic acids are used for the secoisolariciresinol dehydrogense in plants or to alter lignan secoisolariciresinol dehydrogense in plants or to alter lignan plosynthesis. The enzyme is used for production of the pharmacologically active lignan, matairesinol. The secoisolariciresinol dehydrogense alter the lacvels of health-protecting lignans, including phytoestrogens are therefore and enterodiol, in plant species, including cause a enterolactone and enterodiol, in plant species, including cause and from such genetically altered plants; genetically alter plant species to provide an abundant, natural supply of lignans useful for a variety of purposes, for example as neutricenticals and dietary supplements; to genetically alter living organisms to produce an properties, for example (-)-trachlogenin which possesses antiviral properties, and (-)-podophyllotoxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Protein identification; signal transduction pathway; metabolic pathway; hybridisation assay; genetic mapping; gene expression control; promoter; termination sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                    New nucleic acid molecule encoding an enzyme involved in lignan biosynthetic pathway, useful for producing large amounts of lignans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match 6.2%; Score 17; DB 21; Length 17; Best Local Similarity 100.0%; Pred. No. 7.6e-10; Matches 17; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Arabidopsis thaliana protein fragment SEQ ID NO: 37910.
(-)-trachelogenin; antiviral; (-)-podophyllotoxin.
                                                                                                                                              (UNIW ) UNIV WASHINGTON STATE RES FOUND.
                                                                                                                                                                       Xia Z, Costa MA, Davin LB, Lewis NG,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAG31552 standard; Protein; 283 AA.
                                                                                                                                                                                                                                                         Example 1; Page 58; 66pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 15 VALITGGASGIGETTAK 31
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1 VALITGGASGIGETTAK 17
                                                                                               99WO-US08975.
                                                                                                                       98US-0082977.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   17-OCT-2000 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Arabidopsis thaliana.
                      Forsythia intermedia.
                                                                                                                                                                                               WPI; 2000-126356/11.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 17 AA;
                                                                                               23-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EP1033405-A2
                                               WO9955846-A1.
                                                                                                                       24-APR-1998;
                                                                        04-NOV-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAG31552;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
```

```
990S-0132863.
990S-0134256.
990S-0134218.
990S-0134219.
990S-0134221.
                                99US-0123180.
99US-0123548.
99US-0125788.
99US-0126264.
99US-0127462.
                                                                                                                                                                                        990S-0132407.
99US-0132407.
99US-0132484.
99US-0132485.
25-FEB-2000; 2000EP-0301439
```

```
990S - 0142055.
990S - 0142390.
990S - 0142390.
990S - 0142390.
990S - 0142347.
990S - 0143542.
990S - 0144085.
990S - 0144331.
990S - 0144814.
990S - 0144814.
990S - 0144814.
990S - 0144814.
990S - 014508.
990S - 014508.
990S - 014508.
990S - 014538.
990S - 014638.
990S - 014938.
990S - 014938.
990S - 014938.
990S - 014972.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   990S-015363.
990S-0153070.
990S-0153758.
990S-0154018.
990S-0154039.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              20-SEP-1999
```

```
Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match 5.9%; Score 16; DB 21; Length 283; Best Local Similarity 100.0%; Pred. No. 1.1e-07; Matches 16; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Herbicidally active polypeptide SEQ ID NO 2034
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          990S - 0156458

990S - 0156596

990S - 0156596

990S - 0157753

990S - 0158029

990S - 0158029

990S - 0159293

990S - 0159293

990S - 0159293

990S - 0159330

990S - 0159331

990S - 0159331

990S - 0159331

990S - 0159331

990S - 0160741

990S - 0160814

990S - 0160814

990S - 0160814

990S - 0160814

990S - 016081

990S - 016081

990S - 0161405

990S - 0161405

990S - 0161405

990S - 0161405

990S - 0161360

990S - 0161360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        11 LEGKVALITGGASGIG 26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LEGKVALITGGASGIG 33
99US-0155139
                                                     04-0CT-1999;
05-0CT-1999;
07-0CT-1999;
12-0CT-1999;
13-0CT-1999;
13-0CT-1999;
14-0CT-1999;
14-0CT-1999;
14-0CT-1999;
14-0CT-1999;
14-0CT-1999;
14-0CT-1999;
12-0CT-1999;
13-0CT-1999;
13-0CT-1999;
13-0CT-1999;
14-0CT-1999;
13-0CT-1999;
14-0CT-1999;
13-0CT-1999;
13-0CT-1999;
13-0CT-1999;
13-0CT-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
```

ö

Herbicidal; plant; agriculture; herbicide

us-09-673-918a-2.oligo.rag

```
ö
                                                                                                                                                                                                      The invention relates to identifying target proteins (ABB90790-ABB94016) for herbicidally active compounds, comprising aligning and comparing nucleic acid or amino acid sequences from plant with nucleic acid or amino acid sequences from non-plant organisms using suitable search parameters, where plant sequences having an E-value greater by a factor of 3 than the B-value of most similar non-plant sequences are selected. The polypeptides or nucleic acids encoding them are useful for identifying modulators. The identified modulators are useful as herbicides.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Protein identification; signal transduction pathway; metabolic pathway; hybridisation assay; genetic mapping; gene expression control; promoter; termination sequence.
                                                     Identifying plant target proteins for herbicidally active compounds, comprising aligning and comparing nucleic acid or amino acid sequences from plant with nucleic acid or amino acid sequences from non-plant organisms -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        .,
                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 283;
                                                                                                                                                                     Claim 5; SEQ ID NO 2034; 261pp + Sequence Listing; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0, Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Arabidopsis thaliana protein fragment SEQ ID NO: 20101.
                                                                                                                                                                                                                                                                                                                                                                                                                                 Ouery Match 5.9%; Score 16; DB 23; L
Best Local Similarity 100.0%; Pred. No. 1.1e-07;
Matches 16; Conservative 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAG18620 standard; Protein; 300 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 99US-0121825.
99US-0123180.
99US-0123180.
99US-0125788.
99US-0126264.
99US-0126782.
99US-0128714.
99US-0130891.
99US-0130891.
99US-0130891.
99US-0130891.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           11 LEGKVALITGGASGIG 26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LEGKVALITGGASGIG 33
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               25-FEB-2000; 2000EP-0301439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   17-OCT-2000 (first entry)
  Tietjen K, Weidler M;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Arabidopsis thaliana
                                      WPI; 2002-269010/31.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 25 - FEB - 1999;
05 - MAR - 1999;
25 - MAR - 1999;
25 - MAR - 1999;
26 - MAR - 1999;
27 - MAR - 1999;
28 - MAR - 1999;
29 - MAR - 1999;
21 - APR - 1999;
21 - APR - 1999;
21 - APR - 1999;
23 - APR - 1999;
23 - APR - 1999;
30 - APR - 1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EP1033405-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            06-SEP-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAG18620;
                                                                                                                                                                                                                                                                                                                                                                                                 Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 11
AAG18620
XX
AAG18620
XX
AAG18
XX
AAG18
XX
AAG18
XX
AAG18
XX
A Prote
    à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
```

```
99US-0132486.
99US-0132487.
99US-0132487.
99US-0134218.
99US-0134218.
99US-0134218.
99US-013421.
99US-0134221.
99US-0134221.
99US-0134221.
99US-0134221.
99US-0134221.
99US-0134222.
99US-0134221.
99US-0134222.
99US-0134222.
99US-01342845.
99US-0134452.
99US-0134452.
99US-0134452.
99US-0134452.
99US-0134452.
99US-0134452.
99US-0134452.
99US-0134452.
99US-0134452.
99US-0134453.
99US-0134453.
99US-0134453.
99US-0134453.
99US-0134453.
99US-0134453.
99US-0134453.
99US-0134453.
99US-0140353.
99US-0140353.
99US-0140353.
99US-0144334.
99US-0144332.
99US-0144333.
99US-0144332.
```

```
9908 - 0145089 - 9908 - 0145192 - 9908 - 0145192 - 9908 - 0145145 - 9908 - 0145145 - 9908 - 0145145 - 9908 - 0145145 - 9908 - 0145214 - 9908 - 0145214 - 9908 - 0145214 - 9908 - 0145913 - 9908 - 0145913 - 9908 - 0145913 - 9908 - 0145913 - 9908 - 0145913 - 9908 - 0145913 - 9908 - 014936 - 9908 - 014936 - 9908 - 014936 - 9908 - 014936 - 9908 - 014936 - 9908 - 014936 - 9908 - 0149375 - 9908 - 0149373 - 9908 - 0149373 - 9908 - 0149373 - 9908 - 0149373 - 9908 - 0149373 - 9908 - 0149373 - 9908 - 015133 - 9908 - 015133 - 9908 - 015133 - 9908 - 015133 - 9908 - 015133 - 9908 - 0155659 - 9908 - 0155659 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 - 015802 - 9908 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              99US-0159330.
99US-0159331.
99US-0159637.
99US-0159638.
99US-0160741.
99US-0160767.
99US-0160767.
                                                                                                                                                                                                                                 05-AUG-1999;
06-AUG-1999;
06-AUG-1999;
09-AUG-1999;
09-AUG-1999;
11-AUG-1999;
11-AUG-1999;
13-AUG-1999;
13-AUG-1999;
13-AUG-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           27-AUG-1999;
30-AUG-1999;
31-AUG-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     13-OCT-1999;
13-OCT-1999;
14-OCT-1999;
```

99US-0121825.
99US-0123180.
99US-0125788.
99US-0125788.
99US-0126745.
99US-012624.
99US-012624.
99US-0128234.
99US-0128234.
99US-0138234.
99US-0130077.
99US-01300801.
99US-01300801.
99US-01300801.
99US-0132484.
99US-0132484.
99US-0132486.
99US-0132486.
99US-0132486.
99US-0132486.
99US-0132486.
99US-0132486.
99US-0132486.
99US-0132486.

21-APR-1999; 23-APR-1999; 23-APR-1999; 28-APR-1999;

10-APR-1999 30-APR-1999 04-MAY-1999 14-MAY-1999,

29-MAR-1999; 01-APR-1999;

06-APR-1999 08-APR-1999 16-APR-1999 19-APR-1999

2000EP-0301439

25-FEB-2000;

Arabidopsis thaliana

EP1033405-A2

06-SEP-2000

```
ö
                                                                                                                                                                                                                              Protein identification; signal transduction pathway; metabolic pathway; hybridisation assay; genetic mapping; gene expression control; promoter; termination sequence.
                                                                                                                   Gaps
                                                                                                                  .
0
                                                                                                    Length 300;
                                                                                                                 Indels
                                                                                                                                                                                                                  Arabidopsis thaliana protein fragment SEQ ID NO: 20100.
                                                                                                    Score 16; DB 21; I Pred. No. 1.2e-07;
                                                                                                                 Mismatches
                                                                                                                                                                           AAG18619 standard; Protein; 343 AA
                                                                                                    5.9%; Scotlarity 100.0%; Poc
Conservative 0;
                                                                                                                             99US-0160815.
99US-0160980.
99US-0160981.
99US-0160981.
99US-0161404.
99US-0161405.
99US-0161359.
99US-0161359.
99US-0161360.
99US-0161360.
99US-0161361.
99US-0160814
                                                                                                                                                                                                      (first entry)
                                                                                                           Similarity
      21-0CT-1999
22-0CT-1999
22-0CT-1999
22-0CT-1999
25-0CT-1999
25-0CT-1999
26-0CT-1999
26-0CT-1999
28-0CT-1999
28-0CT-1999
28-0CT-1999
                                                                                                                                                                                                     17-OCT-2000
                                                                                                    Query Match
Best Local Simi
Matches 16;
                                                                                                                                                                                         AAG18619;
                                                                                                                                                               RESULT .12
                                                                                                                                                                      AAG18619
d
                                                                                                                                                                            ð
```

•			
		:	
6 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	ო დ დ დ დ დ დ დ დ დ დ დ დ დ დ დ დ დ დ დ	0 0 4 4 0 0 0 0 0 0 4 4 0 0 0 0 0 0 0 0	114 888. 885. 992. 145. 13.
99US-03 90US-03 90US-03 90US-03 90US-03 90US-03 90US-03 90US-03 90US-03 90US-03 90US-03	- SDAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAG	990'S-0140'89'I. 990'S-014128'A. 990'S-014128'A. 990'S-01428'B. 990'S-01428'B. 990'S-01428'B. 990'S-01428'B. 990'S-01428'B. 990'S-01448'B. 990'S-01443'B. 990'S-01443'B. 990'S-01443'B. 990'S-01443'B.	908-01 908-01 908-01 908-01 908-01 908-01 908-01
4880148788889		29-500 20-700	222222222222
		X X X X X X X X X X X X X X X X X X X	

9US-0145919 9US-0145919 9US-0145951 9US-0146386 9US-0146389 9US-0147302 9US-01471302 9US-01471302 9US-01471302 9US-01471303	905 0147453 908 0147453 908 01487493 908 0148341 908 0148684 908 0148684 908 014972 908 014972 908 014972 908 0150884 908 0150884 908 0150884 908 0151080 908 0151383 908 0151383	99018-0153758. 99018-0154039. 99018-0154039. 99018-0155439. 99018-0155439. 99018-0155486. 99018-0155656. 99018-0155656. 99018-01556596. 99018-0157753. 99018-0159294. 99018-0159294. 99018-0159294. 99018-0159294. 99018-0159294. 99018-0159294. 99018-0159294. 99018-0159330. 99018-0159330. 99018-0159330. 99018-0159331. 99018-0159331. 99018-0160741. 99018-0160741. 99018-0160741. 99018-0160768.
27-JUL-1999 R 27-JUL-1999 R 22-JUL-1999 R 02-AUG-1999 R 02-AUG-1999 R 04-AUG-1999 R 05-AUG-1999 R 05-AUG-1999 R 06-AUG-1999	09-AUG-1999 10-AUG-1999 11-AUG-1999	11-58 R R R R R R R R R R R R R R R R R R R

```
New nucleic acid molecule encoding an enzyme involved in lignan biosynthetic pathway, useful for producing large amounts of lignans
                                                                                                     Trypsin fragment of a secoisolariciresinol dehydrogenase protein.
                                                                                                                           Secoisolariciresinol dehydrogenase; lignan biosynthetic pathway; lignan, matairesinol; health-protecting lignan; phytoestrogen; enterolactone; enterodiol; neutriceutical; dietary supplement; (-)-trachelogenin; antiviral; (-)-podophyllotoxin.
                                                                                                                                                                                                                                                                                                  (UNIW ) UNIV WASHINGTON STATE RES FOUND.
                                   AAY54419 standard; Peptide; 15 AA.
                                                                                                                                                                                                                                                                                                                                                                                                       Example 1; Page 58; 66pp; English.
                                                                              06-APR-2000 (first entry)
                                                                                                                                                                                    Forsythia intermedia.
                                                                                                                                                                                                                                                                                                                                                WPI; 2000-126356/11.
                                                                                                                                                                                                                                                       23-APR-1999;
                                                                                                                                                                                                        WO9955846-A1
                                                                                                                                                                                                                                04-NOV-1999
                                                         AAY54419;
                                                                                                                                                                                                                                                                                                                          Xia Z,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches
              RESULT 14
                          AAY54419
                                              ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            The invention relates to identifying target proteins (ABB90790-ABB94016) for herbicidally active compounds, comprising aligning and comparing nucleic acid or amino acid sequences from plant with nucleic acid or amino acid sequences from non-plant organisms using suitable search parameters, where plant sequences having an E-value sequences are selected. The polypeptides or nucleic acids encoding them are useful for identifying modulators. The identified modulators are
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Identifying plant target proteins for herbicidally active compounds, comprising aligning and comparing nucleic acid or amino acid sequences from plant with nucleic acid or amino acid sequences from non-plant organisms.
                                                                                                                             Gaps
                                                                                                                            .
0
                                                                                                    Length 343;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Claim 5; SEQ ID NO 1660; 261pp + Sequence Listing; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 280;
                                                                                                                           0; Indels
                                                                                                   Score 16; DB 21; I
Pred. No. 1.4e-07;
0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      5.1%; Score 14; DB 23; L
100.0%; Pred. No. 1.2e-05;
ive 0; Mismatches 0;
                                                                                                                                                                                                                                                                                               Herbicidally active polypeptide SEQ ID NO 1660.
                                                                                                                                                                                                                                                                                                                       Herbicidal; plant; agriculture; herbicide.
                                                                                                                                                                                                                              ABB92449 standard; Protein; 280 AA
                                                                                                   5.5%,
100.0%; Pre-
99US-0161406.
99US-0161359.
99US-0161360.
99US-0161361.
                                           99US-0161920.
99US-0161992.
99US-0161993.
99US-0162142.
                                                                                                                                                 56
                                                                                                                                                             28-AUG-2001; 2001WO-EP09892.
                                                                                                                                                                                                                                                                                                                                                                                                                                      28-AUG-2001; 2001WO-EP09892.
                                                                                                                                                                                                                                                                           (first entry)
                                                                                                                                                11 LEGKVALITGGASGIG
                                                                                                                         16; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Tietjen K, Weidler M;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          useful as herbicides.
                                                                                                                                                                                                                                                                                                                                              Arabidopsis thaliana.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WPI; 2002-269010/31.
                                                                                                               Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local Similarity
Matches 14; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               280 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                              (FARB ) BAYER AG.
                                                                                                                                                                                                                                                                                                                                                                   WO200210210-A2.
                                                                                                                                                                                                                                                                          31-MAY-2002
                     26-OCT-1999
                                           28-OCT-1999;
                                                                            29-OCT-1999
                                                                                                                                                                                                                                                                                                                                                                                         07-FEB-2002
                                                                  28-OCT-1999
                                                                                                                                                                                                                                                    ABB92449;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence
                                                                                                   Query Match
                                                                                                                                                                                                     RESULT 13
ABB92449
                                                                                                                        Matches
PR
PR
PR
PR
PR
PR
PR
                                                                                                                                                à
                                                                                                                                                                                                                               g
```

Lewis NG;

Costa MA, Davin LB,

99WO-US08975.

```
The present sequence represents a peptide of a secoisolariciresinol dehydrogensse. The enzyme is involved in the lignan biosynthetic pathway. The secoisolariciresinol dehydrogense proteins have a molecular weight of 27-31 kDa, an isoelectric point of 5.9-6.85, and require weight of 27-31 kDa, an isoelectric point of 5.9-6.85, and require need for the recombinant expression of the enzymes. The secoisolariciresinol dehydrogense in the argumes. It is also used to obtain expression or enhanced expression of the enzymes. It is also used to obtain expression or enhanced expression of active lignan attairesinol. The secoisolariciresinol dehydrogense proteins and nucleic acids can be utilized to: elevate or otherwise active lignan, matairesinol. The secoisolariciresinol dehydrogense proteins and nucleic acids can be utilized to: elevate or otherwise alter the levels of health-protecting lignans, including phytrosetrogens cuch as enterolactone and enterodiol, in plant species, including material derived from such genetically altered plants; genetically alter plant species to provide an abundant, natural supply of lignans useful for a variety of purposes, for example as neutriceuticals and dietary abundant enterol of produce an abundant in an elementally alter plant of a wariety of purposes, for example as neutriceuticals and dietary abundant enterol of produce an abundant in an elementally alter plant produce an abundant in an abundant in an elementally alter plant abundant in an abundant in an abundant in a manual elements.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Supprements, commentarily pure lignams having desirable biological phonoperties, for example (-) trachelogenin which possesses antiviral
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        4.4%; Score 12; DB 21; Length 15; 00.0%; Pred. No. 8.8e-05;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  100.0%; Pred. ...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              properties, for example (-)-trachelo
properties, and (-)-podophyllotoxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ABP00547 standard; Protein; 127 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           91 IMFSNAGISDPN 102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         3 IMFSNAGISDPN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          15 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ABP00547
ID ABP0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
```

ö

Gaps

. 0

Indels

Conservative

completed: October 23, 2003, 13:02:43 ne : 117 secs

```
Query Match
4.0%; Score 11; DB 23; Length 127;
Best Local Similarity 100.0%; Pred. No. 0.0069;
Matches 11; Conservative 0; Mismatches 0; Indels
                                                                                                              Shimkets RA, Leach MD;
                                                                                                     (CURA-) CURAGEN CORP.
                                                                                                                     WPI; 2002-106308/14.
N-PSDB; ABN16299.
                                                     myasthenia gravis.
                                                                    WO200192523-A2
                                                            Homo sapiens,
           25-JUN-2002
                                                                           06-DEC-2001.
                                                                                                                                                                                                                                                          Sequence
```

N.B. The sequence data for this patent did not form part of the printed specification, but was obtained in electronic format directly from WIPO at ftp.wipo.int/pub/published_pct_sequences.

```
The present invention describes substantially purified human proteins (referred to as open reading frame, ORFX, where X is 1-11491 (see Table 1 in the specification). ABM15762 to ABM27252 encode the human ORFX proteins given in ABP00010 to ABM15000. ORFX proteins are useful for treating or preventing a pathology associated with an OFFX associated disorder in humans, and in the manufacture of a medicament for treating a spanning a pathology associated with OFFX associated disorder. ORFX polynucleotide syndrome associated with ORFX-associated disorders, or manufacture of a medicament for treating a pathology associated disorders, cirrhosis of liver, psoriasis, benign tumours keloid, degenerative disorders, haemorrhage, osteoarthritis, neurodegenerative disorders, cirrhosis of liver, psoriasis, benign tumours keloid, degenerative disorders, indesteed to organ transplantation, cardiovascular disorders, disorders, infectious disease, autoimmune disorders such as multiple sclerosis, rheumatoid disease, autoimmune disorders such as multiple sclerosis, rheumatoid disease and autoimmune thyroidits, mysathenia gravis, graft-versus-host disease and autoimmune inflammatory eye disease. ORFX proteins are also useful for treating of sorders, or periodontal disease, and for gut protection or regeneration and treatment of lung or liver fibrosis, to reperfusion injury in various tissues and conditions resulting from systemic cataler deat for this patent disorders.
```

ô

Gaps

.

233 ANAALYLASDE 243

```
Search comp
Job time :
                                                                                                                                                 Human, open reading frame, ORFX; gene therapy; cancer; cirrhosis; hyperprofilerative disorder; psoriasis; benign tumour; haemorrhage; degenerative disorder; psoriasis; benign tumour; haemorrhage; cardiovascular disease, diabetes mellitus; systemic lupus erythematosus; hypertension; hypothyroidism; cholesteror] ester storage disease; immune deficiency; immune disorder; infectious disease; autoimmune chyroiditis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Novel human polypeptides and polynuclectides useful for diagnosing, preventing and treating cardiovascular disease, neurodegenerative, hyperproliferative disorders and autoimmune disorders
                                                                               Human ORFX protein sequence SEQ ID NO:1076.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Disclosure; SEQ ID 1076; 1037pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   29-MAY-2001; 2001WO-US10836.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  30-MAY-2000; 2000US-206132P.
29-AUG-2000; 2000US-228716P.
(first entry)
```

ĕ

```
Appl
Appl
4, Appl
30505, A
1, Appl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         19836, A
4448, Ap
66, Appl
25, Appl
25, Appl
25, Appl
3884, Ap
189, Ap
1190, Appl
1190, Appl
1180, Appl
1181, Appl
1180, Appl
1181, 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Appl
Appl
Appl
                                                                                                             19940, A
19538, A
1, Appli
2, Appli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Appli
Appli
Appli
Appli
Appli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Appl
Appl
Appl
Appli
Appli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Appl
578, A
Appli
Appli
                             Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            sednence sed
                                                                                                                                                                                                                          Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence sequence seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence
                                                                                                                                                                                         US-09-079-955-2
US-09-252-991A-17933
US-09-252-991A-17933
US-09-457-0408-26
US-08-684-92A-38
US-08-252-991A-30505
US-08-053-171-31
US-08-637-759B-454
US-08-637-759B-454
US-08-871-355A-454
US-08-871-355A-454
US-09-201-945-454
US-09-201-945-454
US-09-369-447-138
US-09-369-447-138
US-09-369-447-138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-08-784-971-5
US-09-020-018-10
US-09-252-991A-21678
US-08-256-261-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-09-252-991A-24819
US-09-252-991A-18229
US-08-053-171-12
US-08-053-171-13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-08-467-023-61

US-09-252-991A-19816

US-09-328-32-4148

US-08-610-812A-66

US-09-105-069-66

US-09-11-156A-25

US-09-004-730A-25

US-09-107-532A-4618

US-09-107-532A-4618

US-09-107-632A-4618

US-09-107-632A-4618

US-09-107-632A-4618

US-09-107-632A-4618

US-09-107-632A-4618

US-09-107-632A-4618

US-09-107-632A-4618

US-09-107-632A-4618

US-09-107-632A-4618
                                                                                                             US-09-252-991A-19940
US-09-252-991A-19538
US-09-330-095-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-09-252-991A-17376
US-09-536-784-180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .09-252-991A-19836
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-08-256-261-10
US-08-852-299-10
US-08-075-545-2
US-08-256-261-8
US-09-668-648-3
US-09-668-648-7
US-09-293-395-15
US-09-668-648-15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-08-053-171-14
US-08-053-171-17
US-08-815-190A-13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-08-852-299-8
US-08-799-464A-26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-08-852-299-12
US-08-852-299-14
US-09-171-156A-23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PCT-US95-09927-26
PCT-US95-10904-26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-08-477-451-30
US-08-371-505-2
  5742, Ap
19626, A
4339, Ap
2, Appli
2, Appli
2, Appli
2, Appli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              5346, Ap
5, Appli
5, Appli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         5171, Ap
62, Appl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            21618, Å
18834, A
20, Appl
2, Appli
3, Appli
50, Appli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         7908, Ap
4, Appli
24822, A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 11, Appl
Sequence 11, Appl
                                                                                                                                                                                      // Search time 29 Seconds
(without alignments)
398.306 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                    273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Sequence Seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                       273
1 MQLRTAFARRLEGKVALITG......IDGGFSVCNSVIKVFQYPDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GenCore version 5.1.6
(c) 1993 - 2003 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-385-028-11
US-09-726-614-11
US-09-726-614-11
US-09-725-614-11
US-09-252-991A-19626
US-09-134-001C-4339
US-09-134-001C-4339
US-09-252-991A-18834
US-09-252-991A-18834
US-09-252-991A-18834
US-09-252-991A-18834
US-09-252-991A-18834
US-09-347-878-50
US-09-347-878-50
US-09-134-001C-5171
US-09-134-001C-5171
US-09-325-991A-1822
US-09-325-991A-1822
US-09-325-991A-1822
US-09-325-991A-19274
US-09-325-991A-19274
US-09-325-991A-19274
US-09-325-991A-19274
US-09-325-991A-19274
US-09-325-991A-19274
US-09-325-991A-19274
US-09-325-991A-19274
US-09-325-991A-19274
US-09-252-991A-19274
US-09-252-991A-19274
US-09-252-991A-19274
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         328717 segs, 42310858 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Post-processing: Listing first 1000 summaries
                                                                                                                                                                                                  ٠.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SUMMARIES
                                                                                                                                    protein search, using sw model
                                                                                                                                                                                            October 23, 2003, 13:00:45
                                                                                                                                                                                                                                                                                                                                                                                                                          OLIGO
Gapop 60.0 , Gapext 60.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                                                                                                                                                                                                            US-09-673-918A-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length
                                               Copyright
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            00000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0
                                                                                                                                                                                                                                                                                                                                       score:
                                                                                                                                                                                                                                                                                                                                                                                                                          Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score
                                                                                                                                       protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Database :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Word size
                                                                                                                                                                                                                                                                                                                                                                 Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Searched:
                                                                                                                                                                                                                                                                                                            Title:
Perfect
                                                                                                                                                                                         Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Result
No.
```

us-09-673-918a-2.oligo.rai

_	_
	200
_	•
	,
r	4
r	1
-	1
	٠
u	9
u	ה ר
•	٠
₹	۲
_	ř
٢	3
r	4
1	ι
ţ	ָ נ
C)
•	
•	3
	4
F	7

174 6 2.2 292 4 108-09-252-994.231 175 6 2.2 294 4 108-09-252-994.231 176 6 2.2 295 4 108-09-252-994.231 177 6 2.2 295 4 108-09-252-994.231 178 6 2.2 296 4 108-09-368-7314.233 179 6 2.2 296 4 108-09-368-7314.233 189 6 2.2 296 4 108-09-368-7314.233 189 6 2.2 296 4 108-09-368-7314.233 189 6 2.2 296 4 108-09-368-7314.233 189 7 2 2 296 4 108-09-368-7314.233 189 8 2 2 2 304 4 108-09-352-994.18282 189 8 2 2 304 4 108-09-368-994.18282 189 8 2 2 304 4 108-09-352-994.18282 189 9 2 2 2 304 4 108-09-352-994.18282 189 9 2 2 3 304 4 108-09-352-994.18388 189 9 2 2 3 304 4 108-09-352-994.1388 189 9 2 2 3 304 4 108-09-352-994.1388 189 9 2 2 3 304 4 108-09-352-994.1388 189 9 2 2 3 304 4 108-09-352-994.1388 189 9 2 2 3 304 4 108-09-352-994.1388 189 9 2 2 3 304 4 108-09-352-994.1388 189 9 2 2 3 304 4 108-09-352-994.1388 199 9 2 2 3 304 4 108-09-352-994.1388 199 9 2 2 3 304 4 108-09-352-994.1388 199 9 2 2 3 304 4 108-09-352-994.1388 199 9 2 2 3 304 4 108-09-352-994.1388 199 9 2 2 3 304 4 108-09-352-994.1388 199 9 2 2 3 304 4 108-09-352-994.1388 199 9 2 2 3 304 4 108-09-352-994.1388 199 9 2 2 3 304 4 108-09-352-994.1388 199 9 2 2 3 304 4 108-09-352-994.1388 199 9 2 2 3 304 4 108-09-352-994.1388 199 9 2 2 3 304 4 108-09-352-994.1388 199 9 2 2 3 304
6 2.2 292 4 US-09-940-037A-248 6 2.2 296 4 US-09-940-037A-23 6 4 US-09-940-037A-23 6 2.2 296 4 US-09-940-037A-23 6 2.2 313 4 US-09-940-037A-218 6 2.2 314 4 US-09-940-93-035-10 6 2.2 318 3 US-08-940-93-035-10 6 2.2 318 3 US-08-940-93-27-91A-2038 6 2.2 318 2 US-08-940-93-035-10 6 2.2 318 2 US-08-940-93-035-10 6 2.2 318 2 US-08-940-93-035-10 6 2.2 318 3 US-08-940-93-035-10 6 2.2 318 3 US-08-940-93-252-931A-266 6 2.2 318 3 US-08-940-93-252-931A-266 6 2.2 318 3 US-08-940-93-10 6 2.2 318 1 US-09-952-931A-266 6 2.2 318 1 US-09
6 6
นนุน นุน นุน นุน นุน นุน นุน นุน นุน นุ
៸ ๗ Დ Ა Დ Ა Დ Დ Დ Დ Დ Დ Დ Დ Დ Დ Დ Დ Დ Დ Დ
11111111111111111111111111111111111111
23, Appl 11, Appl 11, Appl 11, Appl 12, Appl 12, Appl 12, Appl 13, Appl 17, Appl 17, Appl 17, Appl 17, Appl 18, Appl 19, Appl 19, Appl 19, Appl 11, Appl 12, Appl 13, Appl 14, Appl 15, Appl 16, Appl 17, Appl 17, Appl 17, Appl 18, Ap
Sequence 23, Sequence 23, Sequence 23, Sequence 27, Sequence 77, Sequence 111, Sequence 125, Sequence 126, Sequence 127, Sequence 127, Sequence 127, Sequence 227, Sequenc
08-064-730A-23 08-053-171-7 08-053-171-7 08-053-171-7 08-053-171-7 08-053-171-7 08-053-171-7 08-053-171-7 08-053-171-7 09-107-532A-8 09-732-210-1553 8678-2 09-732-210-1563 8678-2 09-732-210-1563 8678-2 09-732-210-1563 8678-2 09-732-210-1563 8678-2 09-732-210-1563 8678-2 09-732-210-1563 8678-2 09-732-210-1563 8678-2 09-732-210-1563 8678-2 09-732-210-1563 8678-2 09-732-210-1563 8678-2 09-732-210-1563 8678-2 09-732-210-1563 8678-2 09-732-210-1563 8678-2 09-732-210-1563 8678-2 09-732-210-1563 8678-2 09-722-291A-2763 99-722-291A-2955 99-722-291A-2895 99-722-291A-2895 99-722-291A-2895 99-722-291A-2895 99-722-291A-2895
4 4 4 1 1 1 1 4 4 4 4 6 6 6 8 4 4 4 4 4 4 4 4 4 4 4 4
13.7

CE 57, Appli CE
97, Appl 9, Appl 9, Appl 9, Appl 9, Appl 12, Appl 12, Appl 12, Appl 12, Appl 13, Appl 14, Appl 17, Appl 17, Appl 17, Appl 18, Appl
9, Appl 9, Appl 10, Appl 11, Appl 11, Appl 11, Appl 12, Appl 12, Appl 13, Appl 14, Appl 16, Appl 17, Appl 18, Appl 19, Appl 11, Appl 12, Appl 13, Appl 14, Appl 15, Appl 16, Appl 17, Appl 18, Appl 19, Appl 10, Appl 10, Appl 11, Appl 11, Appl 11, Appl 12, Appl 13, Appl 14, Appl 15, Appl 16, Appl 17, Appl 18, Appl 19, Appl 10, Appl
97, Appl 29, Appli 20, Appli 20, Appli 21, Appli 22, Appli 23, Appli 24, Appli 25, Appli 26, Appli 27, Appli 28, Appli 29, Appli 20, Appli 20, Appli 20, Appli 21, Appli 22, Appli 23, Appli 23, Appli 24, Appli 25, Appli 26, Appli 27, Appli 28, Appli 29, Appli 20, Appli 20, Appli 21, Appli 22, Appli 23, Appli 24, Appli 25, Appli 26, Appli 27, Appli 28, Appli 29, Appli 20, Appli 20, Appli 20, Appli 21, Appli 22, Appli 23, Appli 24, Appli 25, Appli 26, Appli 27, Appli 28, Appli 29, Appli 20, Appli 20, Appli 20, Appli 20, Appli 20, Appli 21, Appli 22, Appli 23, Appli 24, Appli 25, Appli 26, Appli 27, Appli 28, Appli 29, Appli 20, Appli 2
3, Appl 3, Appl 3, Appli 3, Appli 12, Appli 12, Appli 12, Appli 12, Appli 13, Appli 14, Appli 17, Appli 18, Appli 19, Appli 10, Appli 11, Appli 11, Appli 12, Appli 13, Appli 14, Appli 15, Appli 16, Appli 17, Appli 18, Appli 18, Appli 19, Appli 10, Appli 11, Appli 12, Appli 13, Appli 14, Appli 15, Appli 16, Appli 17, Appli 18, Appli 18, Appli 19, Appli 10, Appli 115, Appli 115, Appli 120, Appli 13, Appli 14, Appli 15, Appli 16, Appli 17, Appli 18, Appli 19, Appli 19, Appli 10,
acumentes se contentes se conte
US-08-467-023-97 US-08-467-023-97 US-09-149-674-3 US-09-149-674-3 US-09-149-674-3 US-09-149-674-3 US-09-572-141A-27 US-09-572-141A-27 US-09-572-141A-27 US-09-572-141A-27 US-09-141-141A-12 US-09-141-141A-12 US-09-141-141A-12 US-09-191-138-12 US-09-191-139-9 US-09-191-138-12 US-09-191-138-12 US-09-191-139-14 US-09-191-139-14 US-09-191-191A-20 US-09-191-191A-20 US-09-191-191A-20 US-09-191A-20 US-09-191A-20 US-09-191A-20 US-09-191A-20 US-09-191A-20 US-09-191A-20 US-09-191A-20 US-09-191A-20 US-09-191A-30 US-09-191A-30 US-09-191A-30 US-09-191A-30 US-09-191A-30 US-09-191A-39-15 US-09-191A-39-16 US-09-191A-39-16 US-09-191A-39-16 US-09-191A-39-16 US-09-191A-39-16 US-09-191A-39-16 US-09-191A-39-16 US-09-191A-39-16 US-09-191A-39-16 US-09-191A-39-19 US-08-191A-39-19 US-08-191A-39-19 US-08-191A-39-19 US-08-191A-39-19 US-08-191A-39-19 US-08-191A-39-19 US-08-191A-319-19 US-09-252-991A-2053 US-09-252-991A-2053 US-09-252-991A-2053 US-09-252-991A-2053 US-09-252-991A-2053 US-09-252-991A-319-19 US-09-252-991A-319-19 US-09-252-991A-319-19 US-09-252-991A-319-19 US-09-252-991A-319-19 US-09-252-991A-319-19 US-09-252-991A-319-19 US-09-328-3352-5425 US-09-252-991A-319-19 US-09-252-991A-319-19 US-09-252-991A-319-19 US-09-252-991A-319-19 US-09-328-3352-5425 US-09-252-991A-319-19 US-09-328-3352-5425 US-09-252-991A-319-19 US-09-252-991A-319-19 US-09-328-3352-5425 US-09-252-991A-319-19 US-09-328-3352-5425 US-09-252-991A-319-19 US-09-252-991A-319-19 US-09-328-3352-5425 US-09-252-991A-319-19 US-09-252-991A-319-19 US-09-252-991A-319-19 US-09-328-3352-5425 US-09-3328-3352-5425 US-09-3328-3352-5425 US-09-3328-3352-5425 US-09-3328-3352-5425 US-09-3328-3352-5425 US-09-3328-3352-5425 US-09-3328-3352-5425 US-09-3328-3352-5435
M M M M M M M M M M M M M M M M M M M
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
, , , , , , , , , , , , , , , , , , ,

us-09-673-918a-2.oligo.rai

Sequence 31, Appl Sequence 49, Appl Sequence 2, Appl Sequence 2, Appli Sequence 3, Appli Sequence 3, Appli	4 4 4 6	30,00	ก่กเ	10	7,7	71	i 0	, i	, i	7	, v	6	N 4	4,	, ,	23,	000	90,	67,	4,	4 4	27	ا فا	9	, 0 0	9	10,	10	ابا	n 'n	in.	, 'S	16	4.0	61	9.	1 -	17	, r	ce 7,
US-09-02-091A-31c3/ US-09-357-251-31 US-09-206-942-49 US-08-768-147B-2 US-09-968-752B-2 US-09-107-149-3	;	3.3 95.9														е ч	•	0227																43		0.0	20 6	-543-177	S-09-359-304B-Z S-09-359-304B-5	S-09-359-304
1005 1007 1007 1007 1007 1007 1007 1007																																								
,,,,,,,,,,								•		•				•								•	٠.					•		•	• •	•		•			•		•	
, , , , , , , , , , , , , , , , , , , ,	φωφι	o	o vo v	0 0	φ φ	101	ωω	ωı	oω	ωı	φœ	9	φφ	φι	φφ	ww	ωu	φφ	wω	φι	oω	ωv	w	ى س	oυ	vo	φφ	φų	ישים	ωu	ow	ωu	o ro	ហ	υın	ın ı	n n	ימו	տ տ	n m
4 4 4 4 4 4 6 6 8 8 8 8 9 0 1 1 7 4 6 6 8 8 9 9 1 5 7 5 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	474 475 475	477	478 679	481	482 483	484	485 486	487	4 4 8 9 9 9	490	491 492	493	494 495	496	499	499	501	502	504 505	506	508	509	511	512 513	514	516	517 518	519	521	522 402	524	525 526	527	528	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	531	532	5 C C C C C C C C C C C C C C C C C C C	535 535	537
Sequence 43, Appl1 Sequence 43, Appl Sequence 60, Appl Sequence 221, App Sequence 30597, A Sequence 28411, A	6 6 3 6 12 12 3 5	e 67.	9 5 6	21,	ie 23	11	i i i	Ψ.	, w			w.	20 20			Ψ,		* *			, ×	20 7		2, 2,	* *		* *	~ ~		~ .	o o	3, 19,	e 23,	e 26,	26, 26,	e 26,	ze 26,	e 2, Appl	equence	o e e
US-08-736-770-3 Sequence 3, US-08-557-006C-43 Sequence 643 US-09-465-558-60 Sequence 673 US-09-199-637A-221 Sequence 22, US-09-134-001C-3261 Sequence 32, US-09-134-001C-3261 Sequence 28, US-09-252-991A-28411 Sequence 28,	US-09-327-984A-36 Sequence 36, US-09-134-001C-4322 Sequence 43: US-09-562-737-12 Sequence 12, US-09-562-737-12	US-09-107-532A-6715 Sequence 67: US-08-224-657-88 Sequence 88:	US-09-354-138-88 Sequence 88, US-08-993-228-12 Sequence 12, US-08-993-228-12	US-09-519-223-21 Sequence 21, US-09-519-223-21	US-08-555-568B-23 Sequence 23, US-09-519-223-23	US-08-463-620-11 Sequence 11	US-08-224-917-11 Sequence 11, US-08-914-853-11 Sequence 11,	PCT-US95-03934A-11 Sequence	US-09-252-991A-21498 Sequence US-09-500-123-12 Sequence	US-09-252-991A-24489 Sequence	US-08-281-193-2 Sequence US-08-422-106-2 Sequence	US-08-735-716-2 Sequence	US-08-555-568B-2 Sequence US-09-519-223-2 Sequence	PCT-US95-08069-2 Sequence	US-U8-444-818-70 sequence US-08-560-398-2 sequence	US-09-252-991A-19916 Sequence	US-09-252-991A-18831 Sequence	US-09-252-991A-29280 Sequence US-09-500-123-9 Sequence	US-09-328-352-4284 Sequence	US-09-252-991A-21013 Sequence	US-08-699-103B-4 Sequence US-09-229-059-4 Sequence	US-09-628-133-4 Sequence	US-09-252-991A-17678 Sequence	US-09-500-123-7 Sequence US-08-938-830-26 Sequence	US-09-020-222-26 Sequence	US-09-170-496D-278 Sequence	US-09-074-579-4 Sequence US-09-388-774-4 Sequence	US-08-461-562B-2 Sequence	US-09-134-001C-5314 Sequence	US-09-449-285A-2 Sequence	US-09-351-150A-17 Sequence 17,	US-09-107-149-19 Sequence 19, 115-08-335-8442-23	US-09-129-366-23 Sequence 23,	US-08-164-292B-26 Sequence 26,	US-08-845-623-26 Sequence 26, US-08-815-927-26 Semience 26.	US-09-103-330-26 Sequence 26,	US-09-435-242-26 Sequence 26,	US-09-162-021B-2	US-09-252-991A-21000 Sequence 2	US-08-968-752B-4 Sequence
Sequence 3, Sequence 60, Sequence 22, Sequence 320, Sequence 320, Sequence 28,	4 US-09-327-984A-36 Sequence 36 4 US-09-134-001C-4322 Sequence 43: 4 US-09-562-737-12 Sequence 12:	4 US-09-107-532A-6715 Sequence 67.	4 US-09-354-138-88 Sequence 88, 2 US-08-993-228-12 Sequence 12, 2 US-08-993-228-12	2 US-08-555-5686-ZI Sequence ZI, 3 US-09-519-223-21 Sequence 21,	2 US-08-555-568B-23 Sequence 23, 3 US-09-519-223-23	1 US-08-463-620-11 Sequence 11	2 US-08-224-917-11 Sequence 11, 2 US-08-914-853-11 Sequence 11,	5 PCT-US95-03934A-11 Sequence	4 US-09-252-991A-21498 Sequence 4 US-09-500-123-12 Sequence	4 US-09-252-991A-24489 Sequence	1 US-08-281-193-2 Sequence 1 US-08-422-106-2 Sequence	2 US-08-735-716-2 Sequence	2 US-08-555-568B-2 Sequence 3 US-09-519-223-2 Sequence	5 PCT-US95-08069-2 Sequence	3 US-08-444-818-/U Sequence 2 US-08-560-398-2 Sequence	4 US-09-252-991A-19916 Sequence	4 US-09-252-991A-18931 Sequence	4 US-09-252-991A-29280 Sequence 4 US-09-500-123-9 Sequence	4 US-09-328-352-4284 Sequence	4 US-09-252-991A-21013 Sequence	3 US-08-699-103B-4 Sequence 4 US-09-229-059-4 Sequence	4 US-09-628-133-4 Sequence	4 US-09-252-991A-17678 Sequence	4 US-09-500-123-7 Sequence 3 US-08-938-830-26 Sequence	3 US-09-020-222-26 Sequence 4 US-09-170-496D-264 Sequence	4 US-09-170-496D-278 Sequence	3 US-09-074-579-4 Sequence 3 US-09-388-774-4 Sequence	4 US-08-461-562B-2 Sequence	4 US-09-134-001C-5314 Sequence	4 US-09-449-285A-2 Sequence	4 US-09-351-150A-17 Sequence 17,	3 US-09-107-149-19 Sequence 19,	4 US-09-129-366-23 Sequence 23,	2 US-08-164-292B-26 Sequence 26,	3 US-08-845-623-26 Sequence 26, 3 US-08-815-927-26 Sequence 26.	4 US-09-103-330-26 Sequence 26,	983 4 US-09-435-242-26 Sequence 26,	4 US-09-162-021B-2 Sequence 2, Appl	033 4 US-09-252-991A-21000 Sequence 2	036 3 US-08-968-7528-4 Sequence
2 US-08-736-770-3 Sequence 3, 205.08-08-557-006C-43 Sequence 603 4 US-09-465-558-60 Sequence 613 Sequence 613 Sequence 613 Sequence 302 Sequence 303 Sequence 303 Sequence 303 Sequence 304 US-09-134-001C-3261 Sequence 284 US-09-252-991A-28411 Sequence 284	.2 656 4 US-09-37-984A-36 Sequence 36, 2 659 4 US-09-14-001C-4322 Sequence 12, 659 4 US-09-562-737-12 Sequence 12,	.2 662 1 US-08-224-657-88 Sequence 88.	.2 662 4 US-09-354-138-88 Sequence 88,	.2 687 3 US-09-553-568B-Z1 Sequence 21.	.2 688 2 US-08-555-568B-23 Sequence 23. 2 688 3 US-09-519-223-23 Sequence 23.	2 693 1 US-08-463-620-11 Sequence 11	.2 693 2 US-08-224-917-11 Sequence 11. .2 693 2 US-08-914-853-11 Sequence 11.	.2 693 5 PCT-US95-03934A-11 Sequence	.2 736 4 US-09-252-991A-21498 Sequence .2 742 4 US-09-500-123-12 Sequence	.2 742 4 US-09-252-991A-24489 Sequence	.2 752 1 US-08-281-193-2 Sequence .2 752 1 US-08-422-106-2 Sequence	.2 752 2 US-08-735-716-2 Sequence	.2 752 2 US-08-555-568B-2 Sequence .2 752 3 US-09-519-223-2 Sequence	2 752 5 PCT-US95-08069-2 Sequence	.2 /65 3 US-U8-444-818-/U Sequence .2 768 2 US-08-560-398-2 Sequence	.2 773 4 US-09-252-991A-19916 Sequence	2 807 4 US-09-252-991A-11831 Sequence	.2 809 4 US-09-252-991A-29280 Sequence .2 811 4 US-09-500-123-9 Sequence	.2 815 4 US-09-328-352-4284 Seguence	.2 821 4 US-09-252-991A-21013 Sequence	.2 833 3 US-08-699-103B-4 Sequence. .2 833 4 US-09-229-059-4 Sequence	.2 833 4 US-09-628-133-4 Seguence	.2 869 4 US-09-252-991A-17678 Sequence	.2 871 4 US-09-500-123-7 Sequence .2 907 3 US-08-938-830-26 Sequence	.2 907 3 US-09-020-222-26 Seguence	.2 907 4 US-09-170-496D-278 Sequence	.2 911 3 US-09-074-579-4 Sequence .2 911 3 US-09-388-774-4 Sequence	.2 911 4 US-08-461-562B-2 Sequence	.2 930 4 US-09-134-001C-5314 Sequence	.2 944 4 US-09-449-285A-2	.2 954 4 US-09-351-150A-17 Sequence 17,	.2 971 3 US-09-107-149-19 Sequence 19, 2 972 3 US-08-135-84444-23 Sequence 23.	.2 972 4 US-09-129-366-23 Sequence 23,	.2 983 2 US-08-164-292B-26 Sequence 26,	.2 983 3 US-08-845-623-26 Sequence 26, .2 983 3 US-08-815-927-26 Semience 26.	.2 983 4 US-09-103-330-26 Sequence 26,	.2 983 4 US-09-435-242-26 Sequence 26,	.2 1027 4 US-09-162-021B-2 Sequence 2, Appl	.2 1033 4 US-09-252-991A-21000 Sequence 2	.2 1036 3 US-08-968-7528-4 Sequence

٦.
ø
rai
•
.oligo
ĭ
Ų,
-
-
o
٠.
_:
N
1
Ø
m
œ
18
918a.
1
1
1
1
1
1
1
1
1
-08-613-
-08-613-
1

11, 489, 13,	No. 5	33	Sequence 37, Appl Sequence 37, Appl	13	13	4	, ,	3 6	it	?	37	37	32	5	20	L	1 0	7	12	27	,	- 0	9	12	7	1 6	77	2		'n		'n	è.	· .	'n	ğ	٠,	* (69	_	, i	17	,	9	33	16	; .	eduence 4,	ø	equence 2.	מן מטתפונהם	00000000	'z apnanha	ednence Ia	equence 2, Ap	equence 18. A	C annaima	ילתרוויר בי	edneuce 18	ednence 26	emience 65	אל מהתמותם	2	equence 10.	ednence 4'	equence 10	CS apreme		מלחבווכב יז	ednence 18	equence 18	A donaina	מלויסוויסו	edneuce 18	equence 18	emience 18	201	equence 18	equence 18	70 00000000	equence 84	equence 84	emience 5	equence 5,	Sequence 30, Appl	equence 84	ednence 84'
4 US-09-161-939A-11 4 US-09-205-258-489 5 PCT-US95-02626-13	5476 US-0	us-0		us-o	us-o	0-80	110-00-333-3138-8	2 5	110 00 00 00 000	US-08-460-8/4A-3	US-08-388-883B-3	US-08-462-211A-3	US-0	IIS-08-480-190-15	118-08-480-190-27	2 7 9 7 7 9 7 7 7 9 9 7 7 7 7 9 7 7 7 7	C1-6/6-604-60-60	0-50	US-08-475-399A-1	US-08-475-399A-2	118-0		05-09-503-18	PCT-	175-08-141-324-21		0-80	US-0	3	ns-o	1	0-20	US-0	. E	PCT-	118-0		200	ns-o	110.0	0-20	us-o	110		ns-0	0-80		0-20	US-0	US-0	0-211		US-U8-908-39/A-2	-50	US-09-236-385A-2	118-0	T-LOG	1 6	T.	O-SD	118-0	3C-5C0-750-80-2II		US-U9-425-636A-I	BARTHOL	US-09-5	770-017		0-60-60	US-08-1	US-08-1	11S-08-4	0000	05-08-4	US-08-4	US-08-4		US-08-4	US-08-4	0-00-311	0-60-50	US-08-847-429A-	119-08-6	US-08-640-84 /C-	3 US-08-651-136C-30	115-09-065-474-8	US-09-065-4/4-8
50 50 50 50 50 50	20	21	21	21	21	77	1 5	1 5	1 (77	22	22	22	23	, ,	1 6	7 (6.43	23	23	23	3 6	73	23	24	, ,	7.4	24	4 (24		7.4	24		7.4	75) L	0.7	25	ď	67	56	,	3 (27	27		97	28	28	ac	0	97	87	58	28	28	9 6	78	50	50	C	0 0	30	30	30		9 .	10	32	32	3.0	N (32	32	32	N (32	32	1 0	5	33	. "	3	33	, ,	2
11.8	1.8	1.8	6. H	. 8	9.6		9 0	9 0		B .	1.8	1.8	1.8	α,	α			D .	1.8	1.8	α		P .	7.8	α		F. 8	1.8		1.8					٦. ا	α-		, .	1.8	0	Ð .	8.	0		1.8	1.8		B . T	1.8	1.8				•				•		•	- 7			•	•					•					•			•	- 7			•			1.8		•
ហេហេប	ഹവ	ហ	ហហ	'n	n i	חש	n 11) u) L	n i	ហ	ហ	Ŋ	ť	ď	۱ د	nι	η :	'n	'n	Ľ	ונ	ņ	Ŋ	ď	ונ	v	ហ	۱ ۱	'n	L	ŋ	Ŋ) L	v	ď	ונ	Λı	Ŋ	u	n i	'n	·u	ור	ഹ	ហ		n	'n	Ľ	ď) L	n	v i	ហ	ď	ď	1	v	ហ	Ľ	ď	ונ	n	Ŋ	'n	u	וו	n ı	'n	'n	ı L	۱ ۱	n	Ŋ	Ľ	ונ	ις,	Ľ) L	n :	r.	· u	n i	D.	រប	n
612 613 614	615 616	617	618 619	620	621	622	629	1700	1	979	627	628	629	630	159	1000	3 00	633	634	635	636		63/	638	959		640	641		642		643	644		645	646	7	149	648	0 7 7	640	650	123	7 1	652	653) 1	604	655	656	687	0	909	9	099	661	662	2 0	663	664	665	222	0 10	/ 99	899	699	023		1/9	672	673	47.9	* L	e/ 9	929	677		678	679		080	681		700	683	789	400
														_	-					_			_			_	_		_	_	_				_		_						_		-	_	_		_																								_		_	_		_				_		_	_	_	-
Sequence 76, Appl Sequence 8, Appli Sequence 16, Appl	16	່ທີ່	22	7,	97	7 1	- 0	100	7 6	٠. ب			٠	•	₫	: `	Sequence 29, Appl		•	٠				٠	•		•	4	1				٠.			٠.		`	•	_		`.			_				٠.	`.					23(H	-	- [7	17	27	27		ה ד	4	133	u	, (,	200	9	σ	1 -	1	'n	29	;	9	117	10	4.9	ednence	ć	equence 92, App	equence 114, Ap	d of annual a	equence 10, App
Sequence 76 Sequence 8, Sequence 16	Sequence 16 Sequence 2,	Sequence 5,	Sequence 22 Sequence 24	Sequence 7,	Sequence 97	Sequence 97	' action boo	Age (10 points)	de 101 anication 101	sednence 193, Ap	Seguence	Seguence	Seguence	Segmence	TNFORMA		edite in a	, acitanbas	Sednence	Seguence	Semience		Sednence	Sednence	Segmented	2011011100	sednence	GENERAL		Sequence	000000000000000000000000000000000000000	sednence	Seguence	000000000000000000000000000000000000000	sednence :	a dualmas		Sednence	Sequence	a or a character	aorranhac	Sequence	90000000	- Action had	Seguence	Seguence		eduence	Seguence	Seguence	achaines	000000000000000000000000000000000000000	aorianhae	Sednence	Sequence 23	Segmence 1.	Semience 1	11 00110100	zedneuce I.	Sequence 17	Segmence 27	Ce enterines	1 701101000	'cT apmanhas	Seguence 4,	Segmence 13	Company 5	() () () () () () () () () ()	64 aorranhac	Sednence 20	Seguence 6.	PL ACTAINAS		TI apuanbas	Seguence 5,	Segmence 29		Sednence 6,	Seguence 11	ov opuoimes	Sednence 494	Sequence 2,	CP ADDAMES	sequence 92, App	Sequence 114, Ap	Seminance 10	sednence 10, App
9 4 US-09-344-040C-76 Sequence 76 0 2 US-08-276-967-8 Sequence 8, 0 3 US-08-996-338-16 Sequence 16	0 4 US-09-556-972-16 Sequence 16 1 1 US-08-411-727-2 Sequence 2,	1 2 US-08-385-335A-5 Sequence 5,	1 3 US-09-206-059-22 Sequence 22 1 3 US-09-206-059-24 Sequence 24	2 1 US-08-443-642-7 Sequence 7,	2 2 US-08-637-759B-97 Sequence 97	2 3 US-U8-8/I-355A-9/ Sequence 9/	2 3 02 00 33, 211-7 2 4 IIS-09-301+945-97 Semience 97	3 2 IIC_08_637_750B_102 Comispic 102 3m	2 2 20 00 21 25 20 20 20 20 20 20 20 20 20 20 20 20 20	3 3 US-U8-8/1-355A-193 Sequence 193, Ap	3 3 US-08-928-383B-7 Sequence	3 4 US-09-201-945-193 Sequence	4 2 US-08-695-412B-2 Sequence ;	4 2 US-08-937-102-25 Segmenter	4 3 IIS/08/622	2 TG-050-1004 0C K001-070-01-01-01-01-01-01-01-01-01-01-01-01-01	2 00-00-00-00-00-00-00-00-00-00-00-00-00-	, apitanhac 2.42.4.2. Sequence	5 I US-07-907-190-4 Sequence	5 1 US-08-442-063A-1 Seguence	5 1 US-08-442-063A-21 Semience	10 110 00 00 110 1 1 1 1 1 1 1 1 1 1 1	2 02-08-695-412B-1 Sequence	5 2 US-08-683-262B-70 Sequence	5 2 11S-08-937-102-23		2 7 02-08-33/-102-24 seduence	5 3 US/08/622 GENERAL		5 3 US-08-874-197-5 Sequence	0 000 0	2 3 US-08-8/4-19/-9 Sequence	5 3 US-09-361-707-70 Seguence '	00000000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2 4 US-U8-648-182-5 Seguence :	5 4 US-08-648-182-9		T-W779-307-307-30 % oddrence	5 4 US-09-490-702B-20 Sequence ;	7 110-08-164-839-55	acinemice to the contract of t	6 1 US-08-218-025A-12 Sequence	6 1 IIC-08-503-700-55		6 Z US-08-385-335A-6 Sequence (6 3 US-09-434-774-13 Seguence		: acranhac oc-det/-t/c-co-to	7 2 US-08-480-190-236 Seguence ;	7 2 US-08-637-763B-2 Sequence	2 7 TIS-08-488-379-336	, occompos	2 03-03-170-334-2	/ 4 US-US-4/5-399A-236 Sequence	7 5 PCT-US93-07545-236 Sequence 23	8 1 US-08-391-000-1 Sequence 1.	8 2 US-08-741-931-1 Semience 1		8 Z US-U8-923-2/4-1/ Sequence 1/	8 2 US-08-959-536-17 Sequence 17	8 4 US-09-447-125B-27 Segmence 27	7C annaimas 7C-8028-27		cT abundas cT-eee-066-ee &	0 1 US-07-777-715-4 Seguence 4,	0 1 US-08-205-938A-13 Seguence 13	0 1 118-07-908-253-K	1 110 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	25 00 01 02 02 02 02 02 02 02 02 02 02 02 02 02	U I US-08-ZI8-UZ5A-50 Sequence 50	0 1 US-08-170-126-6 Seguence 6.	0 1 IIS-08-321-071A-19 Semience 19	0 1 110 00 00 12 17 13 13 13 13 13 13 13 13 13 13 13 13 13	T -02-02-202-TT-W-TT Sednence TT	0 2 US-08-535-837-5 Seguence 5,	0 3 US-08-467-023-29 Segmence 29	7 110 00 017 7 10 0	0 3 US-08-954-418-6 Seguence 6,	0 3 US-08-602-999A-114 Seguence 11	0 4 TR-00-419-313-494	0 4 US-US-439-313-494 Sequence 494	0 4 US-09-304-799-2 Sequence 2,	0 4 IIS-09-257-179-92	0 4 US-US-ZS/-I/3-92 Sequence 92, App	0 4 US-09-500-124-114 Seguence 114, Ap	0 4 115-09-161-9394-10	o 4 op-09-rer-939A-ro sequence ro, App
4 US-09-344-040C-76 Sequence 76 2 US-08-276-967-8 Sequence 8, 3 US-08-996 338-16 Sequence 16	1.8 10 4 US-09-556-972-16 Sequence 16 1.8 11 1 US-08-411-727-2 Sequence 2,	1.8 11 2 US-08-385-335A-5 Sequence 5,	1.8 11 3 US-09-206-059-22 Sequence 22 1.8 11 3 US-09-206-059-24 Sequence 24	1.8 12 1 US-08-443-642-7 Sequence 7,	1.8 12 2 US-08-637-759B-97 Sequence 97	1.8 12 3 US-US-8/I-355A-9/ Sequence 9/	1.8 12 4 HS-09-201+945-97 Semispre 07	1 8 13 2 110-100-627-75-00-102 Commonto 102 A	ייי ביני יייים אייים הייים	1.9 1.3 3 US-U8-8/1-355A-193 Sequence 193, Ap	1.8 13 3 US-08-928-383B-7 Sequence	1.8 13 4 US-09-201-945-193 Sequence	1.8 14 2 US-08-695-412B-2 Sequence	1.8 14 2 US-08-937-102-25 Semience	1.8 14 3 US/08/622	00 KOOL OAO-00-1011 C LL 0 1	1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	representation of the contract	1.8 15 1 US-07-907-190-4 Sequence	1.8 15 1 US-08-442-063A-1 Sequence :	1.8 15 1 US-08-442-063A-21 Segmence	1 10 11 10 10 10 10 10 10 10 10 10 10 10	T-9214-669-80-20 C C C C C C C C C C C C C C C C C C C	1.8 15 2 US-08-683-262B-70 Sequence	1.8 15 2 IIS-08-937-102-23	יייייייייייייייייייייייייייייייייייייי	1.8 15 2 US-93/-102-24 Sequence	1.8 15 3 US/08/622 GENERAL		1.8 15 3 US-08-874-197-5 Sequence	0 501 750 00 511 6 11 0 1	1.8 1.5 3 US-08-8/4-19/-9 Sequence	1.8 15 3 US-09-361-707-70 Seguence	0 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1.8 15 4 US-U8-548-182-5 Sequence :	1.8 15 4 US-08-648-182-9 Semience	1	1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	1.8 15 4 US-09-490-702B-20 Sequence ;	1.8 1 ttg-08-144-839-55	TO TO TOT OT OT OT	1.8 16 1 US-08-218-025A-12 Sequence	1 8 16 1 HS-08-503-700-55		1.8 16 2 US-08-385-335A-6 Sequence (1.8 16 3 US-09-434-774-13 Sequence		: aorientes oc-get/-1/2-60-50 t ot oct	1.8 17 2 US-08-480-190-236 Seguence	1.8 17 2 US-08-637-763B-2 Sequence	1.8 17 2 IIS-08-488-379-2346	C	7-466-0/1-60-00 C 11 0:1	1.9 1.4 0.5-08-4/5-339A-236 Sequence	1.8 17 5 PCT-US93-07545-236 Sequence 23	1.8 18 1 US-08-391-000-1 Seguence 1.	1.8 18 2 US-08-741-931-1 Semience 1	THE COLUMN TO TH	1.8 18 2 US-U8-323-Z/4-I/ Sequence I/	1.8 18 2 US-08-959-536-17 Sequence 17,	1.8 18 4 US-09-447-125B-27 Semience 27	1.8 18 4 IIS-09-550-800B-07 Semisorce 27	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	cr earlier cr eas a sed refice to	1.8 20 1 US-07-777-715-4 Sequence 4,	1.8 20 1 US-08-205-938A-13 Sequence 13	1 8 20 1 IIS-07-908-253-5		CF CONTROL CF. WORLD CONTROL TO C	1.8 ZU 1 US-U8-ZI8-UZ5A-50 Sequence 50	1.8 20 1 US-08-170-126-6 Sequence 6.	1.8 20 1 IIS-08-321-071A-19 Semience 19	1	TI and a seducing the seducing	1.8 20 2 US-08-535-837-5 Sequence 5,	1.8 20 3 US-08-467-023-29 Semience 29		1.8 20 3 US-08-954-418-6 Sequence 6,	1.8 20 3 US-08-602-999A-114 Sequence 11	1 B 20 4 TIS-00-435-313-404	1.0 20 4 US-US-439-313-494 Sequence 494	1.8 20 4 US-09-304-799-2 Sequence 2,	1.8 20 4 IIS-09-257-179-92 Semience 92	1.0 2.04 02.03-03-03-03-03-03-03-03-03-03-03-03-03-0	1.8 20 4 US-09-500-124-114 Sequence 114, Ap	1.8 20 4 17S-09-161-9398-10 Semisorica 10 Bru	1.0 20 4 US-V9-101-939A-10 Sequence 10, App

-1
Ø
ũ
•
0
g
- н
H
്റ
٠
Q
17
์เซ
Ä
18
9
Ÿ
73
6
Ÿ
_
5
Ÿ
ė
~
-

220123	229,007	15 17 17 17 18 19 19 19	7 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	8466667	25.20 20.20	aquence 466 aquence 36 aquence 637 aquence 637 aquence 12, aquence 12, aquence 12, aquence 12, aquence 527	Sequence 6784, Ap Sequence 6784, App Sequence 6784, App Sequence 148, App Sequence 148, App Sequence 148, App Sequence 118, App Sequence 13, App Sequence 13, App Sequence 1122, App Sequence 515, App Sequence 51
US-09-004-405-15 US-09-004-406C-23 US-09-042-071-26 US-09-205-28-143 US-08-118-270-201 US-08-262-037-65	US-09-27-357-595 US-09-377-466B-27 PCT-US93-08528-201 US-08-963-819-9 US-08-466-961A-29	US-09-155-107-15 US-09-155-107-16 US-09-155-107-17 US-09-155-107-18 US-09-042-071-37 US-08-067-0078-29	US-08-262-037-77 US-08-574-366-2 US-08-572-951-37 US-08-152-7118-19 US-08-152-7218-19 US-08-153-491-5 US-08-941-445A-34 US-08-595-07028-2	US-08-392-816-18 US-08-924-629C-74 US-09-702-705-799 US-09-736-427-799 US-09-732-210-1395 US-09-107-5328-725 US-08-338-510A-6	US-09-061-026-16 US-09-061-026-22 US-09-066-138-16 US-09-267-384-6 US-09-267-384-6 US-09-134-001C-5429 US-09-134-001C-5429 US-09-52-991A-7573 US-09-252-991A-7573	US-09-128-322-4697 US-09-107-522A-4834 US-09-107-532A-6335 US-09-205-258-520 525246-64 US-09-203-806B-12 US-09-243-675-4 US-09-017-754A-12 US-09-134-001C-5270	US-09-107-2328-525-686 US-09-107-532A-6754 US-08-262-033-148 US-08-444-733-148 US-08-444-133-148 US-08-444-134-148 US-08-465-910-148 US-09-134-010-3029 US-09-134-010-3029 US-09-134-010-3029 US-09-134-010-3029 US-09-134-010-3029 US-09-134-010-3029 US-09-134-010-3029 US-09-134-010-3029 US-09-134-010-3029 US-08-
J W W 4 4 4 4 4 4	440400	m m m m m N	4444444	U 4 4 4 4 4 4 O	wwwww44444	4454646444	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
។ ហេ ហ ហ ហ ហ ហ ហ ហ	ហេហហហហហ	ហហហហហហ	រ ល ល ល ល ល ល ល ល	លហហហហហហហហ	. ហេ ហ ហ ហ ហ ហ ហ ហ ហ ហ ហ ហ ហ ហ ហ ហ ហ ហ ហ	ស ហ ហ ហ ហ ហ ហ ហ ហ ហ ហ ហ ហ ហ ហ ហ ហ ហ ហ ហ	ս ա ա ա ա ա ա ա ա ա ա ա ա ա ա ա
759 760 761 763 763	765 766 767 769 770	771 772 773 774 775 775 776 776 776 776 776 776	777 778 779 781 782 783	785 786 788 789 790 791	8 8 8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
n	9 14 19 19 19 19 19 19 19 19 19 19 19 19 19	217	4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		10
Sequence Sequence Sequence Sequence Sequence Sequence Sequence	Sequer Sequer Sequer Sequer Sequer	Sequent Sequent Sequent Sequent Sequent Sequent Sequent Sequent	ianbas ianbas ianbas ianbas ianbas ianbas	Sequence Sequence Sequence Sequence Sequence Sequence	tenthes sections and tenthes sections and tenthes sections are the sections and tenthes sections are the sec	tenbess tenbess tenbess tenbess tenbess tenbess tenbess tenbess	Tentos Sednen Control
0 - SD 0 - SD 0 - SD 0 - SD	US-0 US-0 US-0 US-0	0-80 0-80 0-80	80 - 80 - 80 - 80 - 80 - 80 - 80 - 80 -	- SU - SU - SU - SU - SU - SU - SU - SU		- SU - SU - SU - SU - SU - SU - SU - SU	US-09-018-635-39 US-09-012-962-39 US-09-912-962-39 US-08-462-128-41 US-08-462-128-41 US-08-462-128-41 US-08-462-128-41 US-08-118-270-203 US-08-442-063A-51 US-08-442-063A-54 US-08-469-260A-600 US-08-469-260A-600 US-08-469-260A-600 US-08-467-344A-600 US-08-467-344A-600
							\$\text{A} \text{A} \t
n m m m m m m m							

rai
ø
н
8
D
oli
ᅼ
0
•
N
١.
8
œ
5
'n
673-
۳
÷
~
·
9-60-a
w
~
18
Þ

Sequence 3 Sequence 3 Sequence 3 Sequence 6	ance 7	Sequence 30, Appl Sequence 30, Appl Sequence 50, Appl	ance 5	ance 5	ance 5	ence 2	28,	95,	Sequence 18340, A Sequence 18, Appl	101	Sequence 5, Appli Sequence 5, Appli	9.6	Sequence 119, App Sequence 3974, Ap Sequence 1283, Ap	9 4	Sequence 11, Appl Sequence 11, Appl	166, 2741	439 40,	equence 4 equence 4	equence 26, equence 76,	equence 26, equence 482	LC)	equence 8,	equence 8,	equence 5, equence 8,	equence 8, equence 23,	- 4	equence 20, App	equence 484 equence 6,	equence 13, equence 8,	quence 8,	equence 2, equence 329	equence 89, A	Sequence 34, Appl Sequence 329, App
US-08-470-868A-35 US-09-210-681-35 US-08-946-719A-35 US-09-547-933-35 US-08-262-037-61	US-09-107-532A-6903 US-09-107-532A-7243 US-08-454-557C-30	US-08-340-426D-30 US-08-450-673C-30 US-08-481-658B-50	US-08-486-756A-50 US-08-485-862B-50	US-08-487-077A-50 US-08-485-863A-50	US-08-485-049D-50 US-09-147-857-3	US-09-134-001C-431Z US-09-252-991A-23171 PCT-US95-17111A-30	US-08-858-767-28	US-09-370-838-95 US-09-634-238-305	US-09-252-991A-18340 US-09-397-787-18	US-09-198-452A-1076 US-09-886-319A-16	US-08-220-401-5 US-08-437-362-5	US-09-374-135-6	US-09-399-360B-119 US-09-107-532A-3974 US-09-732-210-1283	US-08-924-629C-39 US-09-107-532A-4967	US-08-241-853-11 US-08-850-917-11	US-09-025-769B-166 US-09-252-991A-27412	US-09-328-352-4390 US-08-378-939-40	US-08-378-939-42 US-08-761-277A-49	US-08-444-644-26 US-08-946-329A-76	US-08-232-246A-26 US-08-936-165A-482	US-09-107-532A-5357 US-07-893-929A-6	US-08-422-101-8	US-08-422-092-8	US-08-788-800-5 US-08-422-093-8	US-08-422-112-8 US-09-102-528-23)-102-528-2)-134-001C-	301-593-20	7-461-325-4 JS92-10344-)-313-942-1 3-436-463-8	-08-024-253 -08-646-981	-08-982-493-2 -09-188-930-3	-09-199-637 -09-399-913	US-09-298-731-34 US-09-312-283C-329
26 9 3 2 2 4 1		00000	000	00 00	00 00 0	0 00 00	თσ		0.0	00	11 12 12		444							6 4	91 4	7.	100	7 6	7 7 W W	Γ. Ε. 4	4.	, r 4 r	8 6	9 9		000	<u>ο</u> ο 4.4.
9 9 9 9 9	, თ თ თ	<i></i>	. თ. თ	ທດ	თ თ ი	<i>,</i> 0, 0	0.0	יסס	6 0	101	10	100	199	122	10	10	22	201	70	201	100	101	101	101	100	91	010	16	25	100	10	000	10
8.8.8.8		9 8 8 9	9.69.	1.8 1.8	80.80	9.69	8.8	8.8	8.8	1.8	9.6		. 60 60	1.8	1.8	1.8 1.8	1.8	8.69	1.8 8.1	4. 4 8. 8.	٠ 9	1.8	. 60.0	9.69	1.8	8.8	. 60.0	1.8	1.8	1.8	1.8	9.1.8	1.8
ոսոսո	വസവ	ហហហ	വവ	വവ	மமா	വവ	יחטו	സസ	ഗഗ	വവ	ហហ	ı ru n	ոտո	ഗഗ	വവ	សស	വവ	ഗഗ	വവ	വവ	ഗഗ	. ທ ແ	י וטי ו	יטט	വവ	ഹവ	o LO LI	വവ	വവ	ហហ	ı u u	மமா	ហហ
909 909 905 907	110	113	116	118	220	4 6 6 4 6 4	25	227	9 2	327	33		0 0 0 0 0 0 0	1 W 4	41	4. 4. 6. 4.		ক ক	4. č	52	53 44	55	in i	ນີ້ເປັນ ອີດຄົນ	61	62 63	49	9 9 9	67 68	69	72	73	75
0, 0, 0, 0, 0	. 0. 0. 0.	01 01 01 0	. 0. 0.	01 01	0, 0, 0		. 01 0	. 01 01	0, 0,	0, 0,	01 01	. 01 0	,, 0, 0,	. 01 01	0, 0,	01 01	თთ	0, 0, ,	0, 0,	01 01	01 01		1010	יוטית	ייי טייי	01 01	1010	лоп	თთ	on on	. 01 01	. თ თ ი	0, 0,
W W L L 4		12, Appl 1275, Ap 1944, Ap	Appli Appli	Appli 3, Ap	53, Ap Appl	Appl Appl	Appl	ppli Appl	AD AD		Overel														•							e e e	7p1
9 4 4 4	nce nce	1.3 4. 03 4	. 4. 4.	4. 01	יי ש	, – 4,	9 -	4.14	(V UI	2,8	54	155	nce 12, Appl nce 12, Appl nce 21, Appl	50	ance 7177, Ap	nce 14, Appl nce 571, App	nce 19809, A nce 5661, Ap	nce 5110, Ap nce 323, App	nce 3695, Ap nce 429, App	nce 2, Appli nce 21, Appl	ince 21, Appl	nce 22408, A	616	y 4.6	3 4	32,4	22.	, w	nce 313, App nce 211, App	421 588	57,4	nce 35, Appl nce 33, Appl	ώ m
		Sequence Sequence Sequence 5	Sequence 4	Sequence (Sequence Sequence 6	Sequence 1	Sequence (Sequence	Sequence	Sequence 2, Sequence 18	Sequence 10 Sequence 1,	Sequence 15	Sequence 12 Sequence 12 Sequence 21	Sequence 55 Sequence 49	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Seguence	Sequence	Sequence 616	Sequence 4,	Sequence 22, Sequence 34,	Sequence 22, Sequence 34,	Sequence 22,	Sequence 34,	Sequence 313 Sequence 211	Sequence 421 Sequence 586	Sequence 57, Sequence 4,	Sequence 35	Sequence 34 Sequence 35
72 3 US-09-383-586-38 72 4 US-09-134-001C-3540 Seq. 75 4 US-09-450-072-70 Seq. 75 4 US-09-351-348-70 Seq. 76 1 US-08-848-252-4	4 US-09-020-846-39 4 US-09-328-352-6085 1 US-08-262-037-68	2 US-08-726-306A-32 Sequence 3 4 US-09-328-352-4275 Sequence 4 US-09-328-352-5944 Sequence 5 1 US-07-041-867R-4	1 US-08-107-755Ā-4 Sequence 4 2 US-08-544-332-4 Sequence 4	4 US-09-370-861A-4 Sequence 4 US-09-107-532A-5823 Sequence 5	4 US-09-107-532A-7263 Sequence 7 1 US-08-665-220-68 Sequence 7 2 TFC-08-174-060-5	3 US-09-053-197A-15 Sequence 3 US-08-338-382-5 Sequence	3 US-09-291-692-68 Sequence 6 4 US-09-085-761A-15 Sequence 1	4 US-09-186-002-4 4 US-09-377-466B-26 Sequence	4 US-09-252-991A-21406 Sequence 2 4 US-09-107-532A-5614 Sequence	1 US-08-848-252-2 Sequence 2, 4 US-09-252-991A-18646 Sequence 18	4 US-09-198-452A-1027 Sequence 10 3 US-09-014-438-1 Sequence 1,	4 US-09-482-273-156 Sequence 15	3 US-09-104-044A-12 Sequence 12 4 US-09-108-452A-21 Sequence 21	4 US-09-328-352-5531 Sequence 55 4 US-09-107-532A-4957 Sequence 49	4 US-09-107-532A-7177 Sequence 3 US-09-107-858-27 Sequence	3 US-09-386-493-14 Sequence 4 US-09-439-313-571 Sequence	4 US-09-252-991A-19809 Sequence 4 US-09-328-352-5661 Sequence	4 US-09-134-001C-5110 Sequence	4 US-09-107-532A-3695 Sequence 3 US-08-905-223-429 Sequence	1 US-08-181-556-2 Sequence 1 US-08-686-878A-21 Sequence	4 US-09-175-928-21 Sequence 4 US-09-453-956-4 Sequence	4 US-09-252-991A-22408 Sequence	4 US-09-328-352-6160 Sequence 616	4 US-09-424-311-4 Sequence 4,	4 US-08-983-502-22 Sequence 22,	4 US-09-516-747-22 Sequence 22, 4 US-09-516-747-34 Sequence 34,	5 PCT-US96-10521-22 Sequence 22	1 US-08-319-387-3 Sequence 34,	4 US-08-936-165A-313 Sequence 313 4 US-09-370-838-211 Sequence 211	4 US-09-312-283C-421 Sequence 421 4 US-09-107-532A-5880 Sequence 586	1 US-08-262-037-57 3 US-09-232-878-4 Sequence 4,	1 US-08-518-878B-35 Sequence 35 1 US-08-518-878B-33 Sequence 37 1 US-08-442-063A-33 Sequence 33	1 US-08-294-522B-34 Sequence 34 2 US-08-807-861A-35 Sequence 35
72 3 US-09-383-586-38 72 4 US-09-134-001C-3540 75 4 US-09-450-072-70 75 4 US-09-351-348-70 76 1 US-08-848-252-4	.8 76 4 US-09-020-846-39 .8 76 4 US-09-328-352-6085 .8 77 1 US-08-262-037-68	.8 77 2 US-08-726-306A-32 Sequence 3	.8 78 1 US-08-107-755A-4 Sequence .8 78 2 US-08-544-332-4 Sequence .	.8 78 4 US-09-370-861A-4 Sequence 4	.8 78 4 US-09-107-532A-7263 Sequence 7 .8 79 1 US-08-665-220-68 Sequence 6 .8 79 1 US-08-665-220-68 Sequence 6	.8 79 3 US-08-338-382-5 Sequence 1.8 79 3 US-08-338-2-5 Sequence 2.8	.8 79 4 US-09-291-692-68 Sequence 6	.8 79 4 US-09-186-002-4 Sequence 3.8 79 4 US-09-377-4668-26 Sequence 2.	.8 79 4 US-09-252-991A-21406 Sequence 2 .8 79 4 US-09-107-532A-5614 Sequence	.8 80 1 US-08-848-252-2 Sequence 2, .8 81 4 US-09-252-991A-18646 Sequence 18	.8 81 4 US-09-198-452A-1027 Sequence 10 .8 82 3 US-09-014-438-1 Sequence 1.	.8 82 4 US-09-482-273-156 Sequence 15	.8 83 4 US-09-174-044A-12 Sequence 12. 88 83 4 US-09-174-642A-21 Sequence 12.	.8 83 4 US-09-328-352-5531 Sequence 55 .8 83 4 US-09-107-532A-4957 Sequence 49	.8 84 3 US-09-107-532A-7177 Sequence	.8 84 4 US-09-386-493-14 Sequence	.8 84 4 US-09-252-991A-19809 Sequence .8 84 4 US-09-328-352-5661 Sequence	.8 85 4 US-09-134-001C-5110 Sequence	.8 86 3 US-08-905-223-429 Sequence	.8 89 1 US-08-181-556-2 Sequence .8 89 1 US-08-686-878A-21 Sequence	.8 89 4 US-09-175-928-21 Sequence .8 89 4 US-09-453-956-4 Sequence	.8 89 4 US-09-252-991A-22408 Sequence	.8 90 4 US-09-328-352-6160 Sequence 616	.8 91 4 US-09-424-311-4 Sequence 4,	.8 91 4 US-08-983-502-22 Sequence 22,	.8 .91 4 US-09-516-747-22 Sequence 22, .8 91 4 US-09-516-747-34 Sequence 34,	.8 91 5 PCT-US96-10521-22 Sequence 22,	.8 92 1 US-08-319-387-3 Sequence 3,	.8 92 4 US-08-936-165A-313 Sequence 313 .8 92 4 US-09-370-838-211 Sequence 211	.8 93 4 US-09-312-283C-421 Sequence 42: .8 93 4 US-09-107-532A-5880 Sequence 586	.8 94 1 US-08-262-037-57 Sequence 57. .8 94 3 US-09-232-878-4 Sequence 4,	.8 96 1 US-08-518-878B-35 Sequence 3E .8 96 1 US-08-442-063A-33 Sequence 3E	.8 96 1 US-08-294-522B-34 Sequence 34 .8 96 2 US-08-807-861A-35 Sequence 35

```
997 5 1.0 110 4 US-912-2122 Sequence 114, App 999 5 1.0 110 1 US-912-2122 Sequence 114, App 999 5 1.0 1110 1 US-912-2122 Sequence 114, App 999 5 1.0 1110 1 US-912-2122 Sequence 114, App 999 5 1.0 1110 1 US-912-2122 Sequence 114, App 999 5 1.0 1110 1 US-912-2122 Sequence 114, App 999 5 1.0 1110 1 US-912-2122 Sequence 114, App 999 5 1.0 1110 1 US-912-2122 Sequence 114, App 999 5 1.0 1112 US-912-2122 Sequence 114, App 1999 5 1.0 112 US-912-2124 Sequence 114, App 1999 5 1.0 US-912-2124 Sequence
```

```
ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-09-126-614-11

Sequence 11, Application US/09726614

Parent No. 6514735

GRAPPLOANT: Kanan E. Jensen

APPLICANT: Kanan B. Jensen

APPLICANT: Kanan B. Jensen

APPLICANT: Kanan B. Jensen

APPLICANT: Kanan B. Jensen

TITLE OF INVENTION: DNA Sequence Encoding Enzymes of Clavulanic

TITLE OF INVENTION: Acid Biosynthesis

NUMBER OF SEQUENCES:

CORRESPONDENCE ADDRESS:

CORRESPONDENCE ADDRESS:

ADDRESSE: JACOBSON, PRICE, HOLMAN & STERN, PPLC

STATE: D.C.

CONTENT: The Jenifer Buliding, 400 Seventh Street, N.W.

CITY: Washington

STATE: D.C.

CONTENT: Washington

STATE: D.C.

COMPUTE: INP PC.COMPATION:

COMPUTE: INP PC.COMPATION:

MEDIUM TYPE: FLOREY

MEDIUM TYPE: FLOREY

COMPUTE: INP PC.COMPATION:

CLASSIFICATION NUMBER: US/09/726,614

PLILAMED DATE: 29-JAN-1998

PLILAMING DATE: 29-JAN-1998

PRIOR APPLICATION NUMBER: US/09/726,614

RECESTRACTION NUMBER: 24.514

RECESTR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                    ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ..
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match 2.9%; Score 8; DB 4; Length 248; Best Local Similarity 100.0%; Pred. No. 6.8; Matches 8; Conservative 0; Mismatches 0; Indels
                                                                                                                                         Length 248;
                                                                                                                                                                                                                    0; Indels
                                                                                                                                         Query Match 2.9%; Score 8; DB 3; Best Local Similarity 100.0%; Pred. No. 6.8; Matches 8; Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT 3
US-09-328-352-5742
; Sequence 5742, Application US/09328352
; TOPOLOGY: linear; MOLECULE TYPE: protein US-09-385-028-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ; TOPOLOGY: linear; MOLECULE TYPE: protein US-09-726-614-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              13 GKVALITG 20
                                                                                                                                                                                                                                                                                          13 GKVALITG 20
                                                                                                                                                                                                                                                                                                                                                                 7 GKVALITG 14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 2
US-09-726-614-11
```

ö

```
;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ..
0
                                                                                               Length 290;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 295;
                                                                                                                                        0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COTTON FIBER TISSUE-SPECIFIC GENES
                                                                                               DB 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2.9%; Score 8; DB 3;
100.0%; Pred. No. 8;
                                                                                             Query Match
2.9%; Score 8; DB 4
Best Local Similarity 100.0%; Pred. No. 7.9
Matches 8; Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COMPLIANCE THE P. CONTAILED CORRESTING SYSTEM: MS-DOS SOFTWARE: WORDDERFECT 6.22 CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/026,482B FILING DATE: 02/19/98
ATTORNEY/AGENT INFORMATION:
NAME: ALMAN, JOY
REGISTRATION NUMBER: 40486
REFERENCE/DOSCET UNMBER: S-87814
TELECOMMUNICATION: TELECOMMUNICATION:
TELEPHONE: 630-252-2179
                                                                                                                                                                                                                                                                                                                              Sequence 2, Application US/09026482B
Patent No. 6143338
GENERAL INFORMATION:
APPLICANT: SOWMERVILLE, CHRIS
TITLE OF INVENTION: ACYL-COA REDUCTASE
NUMBER OF SEQUENCES: CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ADDRESSEE: PAUL A. GOTTLIEB, AGCTT ADDRESSEE: DEPARTMENT OF ENERGY ADDRESSEE: GC-62 (FORSTL) MS-6F-067 STREET: 1000 INDEPENDENCE AVE. S.W. CITY: WASHINGTON, D.C.
                               ; ORGANISM: Staphylococcus epidermidis US-09-134-001C-4339
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 2, Application US/08580545B
Patent No. 5932713
GENERAL INFORMATION:
APPLICANT: Yoshihisa, Kasukabe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: Yoshihisa, Kasukabe
APPLICANT: Koichi, Fujisawa
APPLICANT: Susumu, Nishiguchi
APPLICANT: Yoshihiko, Maekawa
APPLICANT: Randy, Allen
TITLE OF INVENTION: COTTON FIBER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDIUM TYPE: FLOPPY DISK COMPUTER: IBM PC COMPATIBLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match 2.9%;
Best Local Similarity 100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TELEFAX: 630-252-2779 INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE CHARACTERISTICS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COMPUTER READABLE FORM:
                                                                                                                                                                                 14 KVALITGG 21
                                                                                                                                                                                                                            46 KVALITGG 53
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        13 GKVALITG 20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GKVALITG 22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               linear
                                                                                                                                                                                                                                                                                                                   US-09-026-482B-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-09-026-482B-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-08-580-545B-2
           TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                          g
                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 4339, Application US/09134001C

Batent No. 6380370

GENERAL INFORMATION:
GENERAL INFORMATION:
GENERAL INFORMATION:
TITLE OF INVENTION:
TITLE OF INVENTION:
FILE REPRENCES GTC-007
CURRENT APPLICATION NUMBER: US/09/134,001C
CURRENT APPLICATION NUMBER: US 60/064,964

PRIOR FILING DATE: 1998-08-13
PRIOR APPLICATION NUMBER: US 60/064,964
PRIOR FILING DATE: 1997-11-08
PRIOR APPLICATION NUMBER: US 60/055,779
PRIOR FILING DATE: 1997-08-14
NUMBER OF SEQ ID NOS: 5674
SEQ ID NO 4339
LENGTH: 290
Patent No. 6562958

GENERAL INFORMATION:
PAPLICANT: Gary L. Breton et al.
TITLE OF INVENTION:
NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO ACINETOBACTER
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES
TITLE OF INVENTION: BAUMANNII FOR DIAGNOSTICS AND THERAPEUTICS
TITLE OF INVENTION: BAUMANNII FOR DIAGNOSTICS AND THERAPEUTICS
CURRENT APPLICATION NUMBER: US/09/328,352
CURRENT PILING DATE: 1999-06-04
NUMBER OF SEQ ID NOS: 8252
LENGTH: 262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GENERAL INFORMATION:
APPLICANT:
APPLICANTION:
APPLICANTION:
APPLICANTON:
APPLICANTION:
APPLICANTION:
APPLICANTION NUMBER:
US 60/074,788
PRIOR APPLICATION NUMBER:
US 60/094,190
PRIOR FILING DATE:
1998-07-27
NUMBER OF SEQ ID NOS:
33142
SEQ ID NO 19626
                                                                                                                                                                                                                                                                                                                                                                                  ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ö
                                                                                                                                                                                                                                                                                                                                                                                  ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ö
                                                                                                                                                                                                                                                                                                                                     Length 262;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 267;
                                                                                                                                                                                                                                                                                                                                                                                  0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0; Indels
                                                                                                                                                                                                                                                                                                                                   DB 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match 2.9%; Score 8; DB 4;
Best Local Similarity 100.0%; Pred. No. 7.3;
Matches 8; Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                  Mismatches
                                                                                                                                                                                                                                                                                                                                     Score 8; 1
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 19626, Application US/09252991A
Patent No. 6551795
                                                                                                                                                                                                                                            TYPE: PRT ; ORGANISM: Acinetobacter baumannii US-09-328-352-5742
                                                                                                                                                                                                                                                                                                                                   Query Match
2.9%; Soc
Best Local Similarity 100.0%; Pi
Matches 8; Conservative 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TYPE: PRT
ORGANISM: Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               185 IRVNCLSP 192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      196 IRVNCLSP 203
                                                                                                                                                                                                                                                                                                                                                                                                                           13 GKVALITG 20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                18 GKVALITG 25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-252-991A-19626
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-09-252-991A-19626
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-09-134-001C-4339
                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
```

ö

Gaps

ö

```
US-09-328-352-4279
US-09-328-352-4279
US-09-328-352-4279
Sequence 4279. Application US/09328352
Patent No. 656298
GENERAL INFORMATION:
TITLE OF INVENTION: BAUMANNI FOR DIAGNOSTICS AND THERAPEUTICS
TITLE OF INVENTION: BAUMANNI FOR DIAGNOSTICS AND THERAPEUTICS
TITLE OF SEQUENCE: G729-03P4
CURRENT APPLICATION NUMBER: US/09/328,352
CURRENT FILING DATE: 1999-06-04
NUMBER OF SEQ ID NOS: 8252
IENGTH: 87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 172;
                                                                                                                                                                                Length 323;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0; Indels
                                                                                                                                                                                                                0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2.6%; Score 7; DB 4; Length 87;
100.0%; Pred. No. 25;
iive 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match 2.9%; Score 8; DB 3; Best Local Similarity 100.0%; Pred. No. 8.7; Matches 8; Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ORGANISM: Acinetobacter baumannii
US-09-328-352-4279
TELECOMMUNICATION INFORMATION:
TELEPRONE: 202/783-570
TELEPRAX: 202/783-531
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
LENGTH: 323 amino acids
TYPE: amino acid
TYPE: amino acid
TYPE: amino acid
TYPE: APPE: protein
US-09-262-653A-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TYPE: PRT ; ORGANISM: Pseudomonas aeruginosa US-09-252-991A-21618
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local Similarity 100.
Matches 7; Conservative
                                                                                                                                                                                                                                                                    40 TGGASGIG 47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   140 RSGNIIS 146
                                                                                                                                                                                                                                             19 TGGASGIG 26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 65 RSGNIIS 71
                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               οg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ó
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 323;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0; Indels
                                                                                                           COMPUTER REABLE FORM:

MEDIUT TYPE: Floppy disk

MEDIUT TYPE: Floppy disk

COMPUTER: IBM PC compatible

OPERATING SYSTEM: PC-DOS/MS-DOS

SOFTWARE: Patentin Release #1.0, Version #1.25

CURRENT APPLICATION DATA:

APPLICATION NUMBER: US/08/580,545B

FILING DATE:
CLASSIFICATION: 800

ATTORNEY/AGENT INFORMATION:
NAME: Bretschneider, Barry E.
REFERENCE/DOCKET NUMBER: 04473/068001

TELECOMMUNICATION INFORMATION:
TELEPHONE: 202/783-5070

TELEPHONE: 202/783-5070

INFORMATION FOR SEQ ID NO: 2:
SEGUENCE CHARACTERISTICS:
LENGTH: 323 amino acids

TVDERE CHARACTERISTICS:
LENGTH: 323 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COMPUTER READBLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: LIBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/262,653A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match 2.9%; Score 8; DB 2;
Best Local Similarity 100.0%; Pred. No. 8.7;
Best Ches 8; Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CLASSIFICATION: 800
ATTORNEY/AGENT INFORMATION:
NAME: Bretschneider: Barry E.
REGISTRATION NUMBER: 28,055
REFERENCE/DOCKET NUMBER: 04473/068001
   NUMBER OF SEQUENCES: 10
CORRESPONDENCE ADDRESS:
ADDRESSEE: Fish & Richardson P.C.
STREET: 601 Thirteenth Street, NW
CITY: Washington
                                                                                                                                                                                                                                                                                                                                                                                                                            LENGTH: 323 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-580-545B-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        19 TGGASGIG 26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             40 TGGASGIG 47
                                                                                                      USA
                                                                      CITY: Washin
STATE: DC
COUNTRY: US/
ZIP: 20005
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COUNTRY: U
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 8
US-09-262-653A-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
```

ઠે

```
Sequence 3, Application US/08815225
Sequence 3, Application US/08815225
GENERAL INFORMATION:
APPLICANT: Stern, David M.
APPLICANT: Stern, David M.
TITLE OF INVENTION: BINDING (ERAB) POLYPEPTIDE AND METHODS FOR INHIBITING
TITLE OF INVENTION: NEURODEGENRATIVE CONDITIONS
TITLE OF INVENTION: NEURODEGENRATIVE CONDITIONS
NUMBER OF SEQUENCES:
CORRESPONDENCE ADDRESS:
ADDRESSEE: Cooper & Dunham LLP
                       APPLICANT: Yan, Shi Du
TITLE OF INVENTION: AN INTRACELLULAR AMYLOID-BETA PEPTIDE
TITLE OF INVENTION: BINDING (ERAB) POLYPEPTIDE AND METHODS FOR INHIBITING
TITLE OF INVENTION: NEURODEGENRATIVE CONDITIONS
NUMBER OF SEQUENCES: 5
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ó,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 261;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0; Indels
                                                                                                                                                                                                                                                                    ZIP: 10036
COMPUTER READABLE FORM:
MEDIUM TYPE: RIOPPY disk
COMPUTER: Eloppy disk
COMPUTER: DESPETION FOCOMPATIBLE
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/815,225
FILING DATE: 12-MAR-1997
CURSIFICATION: SAF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SOFTWARE: Patentin Release #1.0, Version #1.30 CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/815,225 FILING DATE: 12-MAR-1997 CLASSIFICATION: 536
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ATTORNEY/AGENT INFORMATION:
NAME: White, John P.
REGISTRATION NUMBER: 28,678
REFERENCE/DOCKET NUMBER: 0575/55209
TELECOMMUNICATION INFORMATION:
TELEPHAX: (212) 278-0400
TELEPHAX: (212) 391-0525
INFORMATION FOR SEQ ID NO: 2:
                                                                                                                                                           ADDRESSEE: Cooper & Dunham LLP
STREET: 1185 Avenue of the Americas
CITY: New York
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STREET: 1185 Avenue of the Americas CITY: New York
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
COMPUTER: PR PC COMPATION SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match 2.6%;
Best Local Similarity 100.0%;
Matches 7; Conservative 0
    David M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                : 261 amino acids
amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE CHARACTERISTICS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; MOLECULE TYPE: protein US-08-815-225-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          18 ITGGASG 24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       15 ITGGASG 21
       Stern,
                                                                                                                                                                                                                                                      U.S.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         U.S.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              10036
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STATE: NY COUNTRY:
                                                                                                                                                                                                                                                      COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                JS-08-815-225-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LENGIH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                           GENERAL INDORMATION:
APPLICANT: Marc J. Rubenfield et al.
APPLICANT: Marc J. Rubenfield et al.
APPLICANT: Marc J. Rubenfield et al.
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
FILE REFERENCE: 107196.136
CURRENT APPLICATION NUMBER: US 60/074,788
PRIOR APPLICATION NUMBER: US 60/074,788
PRIOR FILING DATE: 1998-07-18
PRIOR FILING DATE: 1998-07-27
NUMBER OF SEQ ID NOS: 33142
SEQ ID NO 18834
LENGTH: 175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 20, Application US/09648004

Sequence 20, Application US/09648004

Patent No. 6498242

GABERAL INPORMATION:
APPLICANT: CHEM, OLONG

APPLICANT: THOMAS, STUART

APPLICANT: NAGARAJAN, WASANTHA

TITLE OF INVENTION: BIOLOGICAL METHOD FOR THE PRODUCTION OF ADIPIC ACID AND
TITLE OF INVENTION: INTERMEDIATES
FILE REPREBENCE: CL-1341-A

CURRENT APPLICATION NUMBER: US/09/648,004

CURRENT APPLICATION NUMBER: 09/252,553

PRIOR FILING DATE: 1999-02-19

NUMBER OF SEQ ID NOS: 32

SOFTWARE: Microsoft Office 97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 251;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 175;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2.6%; Score 7; DB 4;
100.0%; Pred. No. 47;
iive 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 7; I
Pred. No.
                                                                                                                                                        Sequence 18834, Application US/09252991A
Patent No. 6551795
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT 13
US-08-815-225-2
; Sequence 2, Application US/08815225
; Detent No. 6266479
; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TYPE: PRT
ORGANISM: Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match 2.6%; Best Local Similarity 100.0%; Matches 7; Conservative 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ; TYPE: PRT
; ORGANISM: Acinetobacter sp.
US-09-648-004-20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ouery Match
Best Local Similarity 100...
7; Conservative
176 LAVELGQ 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         133 ARVMIPA 139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     108 ARVMIPA 114
                                          47 LAVELGO 53
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   12 KVALITG 18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            14 KVALITG 20
                                                                                                                                     US-09-252-991A-18834
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-09-252-991A-18834
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 12
US-09-648-004-20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQ ID NO 20
LENGTH: 251
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QQ
```

ò

ò g

```
..
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ÷
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 15
US-09-347-878-50

is Sequence 50, Application US/09347878C

j Patent No. 6376210

j GENERAL INFORMATION:
 APPLICANT: Vuan, Chong

i TITLE OF INVENTION: METHODS AND COMPOSITIONS FOR ASSAYING ANALYTES

f TILE REFERENCE: 2586-1651

CURRENT FILING DATE: 199-07-06

j CURRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match 2.6%; Score 7; DB 3; Length 261; Best Local Similarity 100.0%; Pred. No. 68; Matches 7; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match

2.6%; Score 7; DB 4; Length 261;
Best Local Similarity 100.0%; Pred. No. 68;
Matches 7; Conservative 0; Mismatches 0; Indels
ATTORNEY/AGENT INFORMATION:

NAME: White, John P.

REGISTRATION NUMBER: 28,678

REFERENCE/DOCKET NUMBER: 0575/55209

TELEFONNET (212) 278-0400

TELEFONNET (212) 391-0525

INFORMATION FOR SEQ ID NO: 3:

SEQUENCE CHARACTERISTICS:

LENGTI 261 amino acids

TENGTI 261 amino acids

TENGTI 261 amino acids

TENGTI 261 amino acids

TENGTI 261 amino acids

TOPOLOGY: linear

MOLECULE TYPE: peptide

US-08-815-225-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Search completed: October 23, 2003, 13:06:08 Job time : 51 secs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     18 ITGGASG 24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        18 ITGGASG 24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               15 ITGGASG 21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |||||||
15 ITGGASG 21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    QQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Dp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
```

Sequence 2, Appli Sequence 6, Appli Sequence 8, Appli Sequence 20, Appl Sequence 23, Appl Sequence 23, Appli Sequence 5, Appli Sequence 6, Appli Sequence 6, Appli Sequence 62, Appli Sequence 61, Appli Sequence 61, Appli

```
0 US-09-931-186-2

0 US-09-931-186-6

0 US-09-931-186-6

0 US-09-931-186-6

0 US-09-931-186-6

0 US-09-931-186-10

0 US-09-931-186-10

1 US-09-964-761-4246

1 US-09-864-761-4346

1 US-09-864-761-43451

1 US-09-864-761-43451

1 US-09-864-761-43451

1 US-09-864-761-43451

1 US-09-864-761-4351

1 US-09-864-761-4351

1 US-09-864-761-4351

1 US-09-864-761-4351

1 US-09-864-761-4351

1 US-09-864-761-4351

1 US-09-964-761-4351

1 US-09-964-761-4351

1 US-09-966-20-1355

2 US-10-010-986-504-504

2 US-10-010-986-504

2 US-10-010
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2 US-09-882-227-14
US-09-765-272-180
2 US-10-029-386-28905
0 US-09-864-761-38565
US-09-864-761-38565
US-09-864-761-46287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-10-203-224-10
US-10-147-951B-1
US-10-083-357-1166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 10597, A Sequence 473, App Sequence 128, App Sequence 128, App Sequence 128, App Sequence 128, App Sequence 45, App Sequence 13753, A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 13753, A
Sequence 144, App
Sequence 9390, Ap
Sequence 20, Appl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 24, Appl
Sequence 14812, A
Sequence 14537, A
                                                                                                                                 ; Search time 68 Seconds (without alignments) 672.305 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                       273
                                                                                                                                                                                                           US-09-673-918A-2
273
1 MQLRTAFARRLEGKVALITG......IDGGFSVCNSVIKVFQYPDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1: /cgn2_6/ptodata/1/pubpaa/USO7_PUBCOMB.pep:*
2: /cgn2_6/ptodata/1/pubpaa/USO7_PUBCOMB.pep:*
3: /cgn2_6/ptodata/1/pubpaa/USO6_NEW_PUB.pep:*
4: /cgn2_6/ptodata/1/pubpaa/USO6_NEW_PUB.pep:*
5: /cgn2_6/ptodata/1/pubpaa/USO7_NEW_PUB.pep:*
6: /cgn2_6/ptodata/1/pubpaa/USO7_NEW_PUB.pep:*
7: /cgn2_6/ptodata/1/pubpaa/USO7_NEW_PUB.pep:*
8: /cgn2_6/ptodata/1/pubpaa/USO8_PUBCOMB.pep:*
9: /cgn2_6/ptodata/1/pubpaa/USO9_PUBCOMB.pep:*
1: /cgn2_6/ptodata/1/pubpaa/USO9_PUBCOMB.pep:*
1: /cgn2_6/ptodata/1/pubpaa/USO9_PUBCOMB.pep:*
2: /cgn2_6/ptodata/1/pubpaa/USO9_PUBCOMB.pep:*
3: /cgn2_6/ptodata/1/pubpaa/USO9_PUBCOMB.pep:*
5: /cgn2_6/ptodata/1/pubpaa/USO9_PUBCOMB.pep:*
7: /cgn2_6/ptodata/1/pubpaa/USO0_PUBCOMB.pep:*
                       GenCore version 5.1.6
Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0 US-09-944-160-24

5 US-10-156-76-14812

US-10-156-76-11637

US-09-815-242-10597

2 US-10-238-075-473

US-09-984-245-128

1 US-09-984-966-128

1 US-09-981-966-128

5 US-10-143-090-128

US-10-143-090-128

US-10-291-190-45

US-10-291-190-45

US-09-815-242-13753

US-09-815-244-144

5 US-10-156-761-9390

5 US-10-156-761-9390
                                                                                                                                                                                                                                                                                                                                                                                                                           Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                   629382 segs, 167460630 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Post-processing: Listing first 1000 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Published Applications_AA:*
                                                                                             protein search, using sw model
                                                                                                                                     October 23, 2003, 13:05:35
                                                                                                                                                                                                                                                                                             OLIGO
Gapop 60.0 , Gapext 60.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query
Match Length
```

0

••

Word size

Database

Searched:

score:

Title: Perfect

Sequence:

protein

е Е

Run ŏ

Scoring table:

Sequence 11310, A Sequence 11310, A Sequence 1134, A Sequence 1184, A Sequence 1184, A Appl Sequence 1184, Appl Sequence 56, Appl Sequence 60, Appl Sequence 1318, Appl Sequence 42451, A Sequence 42551, A Sequence 42516, A Appl Sequence 61318, Appl Sequence 21, Appl Sequence 21, Appl Sequence 21, Appl Sequence 21, Appl Sequence 1138, Appl Sequence 21, Appl Sequence 1355, Appl Sequence 21, Appl Sequence 1355, Appl Sequence 1355, Appl Sequence 1355, Appl Sequence 2321, App

Sequence 30239, Ap Sequence 5204, Ap Sequence 5562, Ap Sequence 556, Appli Sequence 25, Appli Sequence 1363, Ap Sequence 1363, Ap Sequence 1363, Ap Sequence 14, Appl Sequence 180, App Sequence 28905, A Sequence 38565, A Sequence 16887, A Sequence 10, Appl Sequence 10, Appl Sequence 10, Appl Sequence 11, Appl Sequence

Sequence Sequence

Score

Result

us-09-673-918a-2.oligo.rapb

	ביים					_	_	_		_				_	_												_																	_	_											_	_	_	_	_	_	_	_			_	_	_	_	_	_						_
, App , App , App																																																																													
e 360,	7) [7	, (,)	(-1	.,	.,,		٠,	",	. 4	1.	4.		., (., ,	.,	14	(,,	٠,	, ,,	, ,	., ,	(.,)	4.1	۲,	11.	٠,	1.1	٠,,	, ,	., ,	",		, ,	') (٠,	r,	٠,	4.5	, ,,	,, (111	4.1	4.1			٠,		, ,		٠, ,	., .	, .	,,,		, ,		.,,	.,			٠.,			•			٠,	٠,	٠.	٠,			٠,		٠,		•
sequence sequence	quenc	menc	Juenc	Juenc	quenc	Thenc	Trenc	guenc	quenc	nenc	0.00	Juent	duenc	Juent	Juent	quenc	nenc	Duein		one of	Juent	Juenc	quenc	ייייייייייייייייייייייייייייייייייייייי	200	Juenc	quenc	0.00	1	Juent	nenc	יים		duenc	Thenc	guenc	Inenc	menc	0.0	duenc	menc	quenc	ruenc	nienc	rvenc	Tienc	0001		7000	duenc	quenc	71000	Juenc	Juenc	Thent	quenc	quenc	quenc	Juenc	guenc	quenc	quenc	ruenc	nienc		daenc	Tuenc	quenc	quenc	quenc	Tuenc		מושוע			duenc	quenc
Seg	Sec	Sec	Sec	Sec	Sec	Sec	Sec	Sec	Sec	Sec	0	מים	ממ	Sec	Sec	Sec	Sec	o C	0 0	ט מ	S C	Sec	Sec	S	0,0	Sec	Sec	ď	0 0	S C	Sec	O.	9 6) D	Sec.	Sec	Sec	Sec	0	200	Sec	Sec	Sec	G.	Sec	ď	0 0	2 0	0 0	กับ	9 6	ט נ	מ מ	ט ט ט	מ מ	Sec	S	0 0	200	Sec	Sec	Sec	Sec	Sec	Ď	Ď ď	, c	9 0	Ď	Ses							
000	336	'n	m	m.	m 1	m	n	ñ	2	m	٦,	7 (955	າ ເ	ñ	N	-336	· (*	7 <	0 0	0 9 0	990	091	0 9		099	091	0		0 0	091	091	2 0	200	091	091	99	091		0 0	091	091	098	160	098	160	090	0 0	000	0 0	000		000	000	000	093	098	098	960	960	960	960	960	960		200	360	360	360	360	360		090	0 0	000	000	360
2-475-36 2-475-36 2-101B-3	137A-	754A-	909A-	911A-	912A-	610A	653A	671A-	081-2	237A-	0062	4000	7884	480A-	715A-	082-2	753A-	2858	1000	000	-086	758-3	737-3	706-3	2 0	738-	752-3	400	יייי טייי	-/0/	913-3	552-3	1 1	2-/20	-00/	572-3	579-3	582-3	000	2000	739-3	740-3	743-3	488-	492-3	747-	750-7	000	0 0	7 0 0	1000	7 0	0 0	1100	0.00	- 169	705-	576-	585-	-989	747-3	481-3	485-3	487-		201	-954-	911-	919-3	925-3	978-		542	544	1 7 7 1	0.00	-247-
-202-	-012-	-012-	-013-	-013-	-013-	-015-	-015-	-015-	-223-	-012-	101	1	-010-	-010-	-015-	-223-	-012-	-015-	1	1200-	- 6/T-	-176-	-175-	-173-	1 -	-175-	-175-	176-	1 -	- 0 / T -	-	ī	1 -	ĩ	Ŧ	-174-	-174-	-174-	177	-1/4-	-175-	-175-	-1	7	H	Ì	÷	4 -	, ÷	7;	7 -	1 -	ĭ	7 ;	٠,	7	7	7	7	7	÷	÷	÷	Ì	1 +	7	Ħ	Ħ	Ħ	Ħ	ij	1 -	17	-	1	7,	7
202	0 0	15	5.	9	10	9	-10	<u>۔</u>	-10	101	1 -	7	7 :	2 :	-10	-10	-10	0	1 .	7 -	7	-10	-10	-	1 7	2	5	-	1 .	7	-10	-	1 -	7		5	9	-10	1 -	7	-10	-10	-10	-10	-10	-	1 -	1 -	7	7 ,	7 .	1 -	7 5	7 5	7 5	7	2	-10	- 50	5	-10	-10	-10	10	1 -	7	5	-10	-10	-10	107	1 -	7 -	1	1 -	7 .	7
122	o c	10	0	cı.	ο,	N	N	N	N	~		١ ،	V (.	ca.	C)	N		١.	.	ο,	s	S	ď	.		s	· ur	٠.	n	'n	Ľ	ם נ	Λi	2	'n	_D	S		٥	'n	ഗ	'n	·	ហ	ır	٠ د	าย	ח ש	n ı	n u	٦ L	n L	nι	n s	n i	ഗ	ın ı	ro.	Ŋ	ß	ഗ	r.	ď	٠ د	n i	ß	S	ιO	ហ	ı un	ו נ	חני	n c	Λu	n ı	'n
148	4.4	י סי	4	4	ᢦ.	ď	4	4	4	4	• 4		d, .	σ.	4	4	4	4	* 4	,,	4.	4	4	4	۲,	4	4	4	٠,	4	4	4	٠.	•	4	4	4	4		₩.	4	4	4	4	4	4	٠ ٧	, ,	* 5		♥ <	* 5	,	* *	* •	φ,	4	4	4	4	4	4	4	4	٠,	4.	4	4	4	4	. 4	۲ ۲	* 4	* 4	* 5	* •	4
100	N C	1 (1	N	O.	ο,	N	2	~	7	2		v (ν.	N (01	N	~		N (u (7	0	2		4 (~	~		4 (ν.	~	0	1 (ν.	Ν.	cv.	0	~		ν,	a	~	2	2	2	,		۰,	۷ (V (N (4 (v (v (ν (7	21	C)	~	7	8	~	~	,	·	7	7	7	7	10	1 (N C	40	N (N (N
0 0							٠												٠							٠				٠			•	٠													•	•	•	•		•	•	•	•	٠	•	•	٠	•	•				•	•		٠				•		•	•		
o o o	6 4	w	9	φ	9	9	9	ø	9	٧	v	۰ م	۱ م	ا ع	9	Q	9		D V	۰ د	۰ م	ø	9		٠,	و	ø	4		۰	ø	٠	٠,	۰ م	9	φ	9	9	· u	ا م	ø	w	9	4	G	v	v	9 4	9 (ه د	۰ م	۰ ر	ь (۰ ۵	۰۵	9	9	9	9	ø	ø	9	G	v	•	۰	ø	9	v	9	œ	9 4	ט פ	o u	יים	۰ م	9
163	165	167	168	169	170	171	172	173	174	175	170	1 0	7.7	178	179	180	181	100	0 0	0 1	184	185	186	787	0 0	188	189	100	1 1	121	192	193	1 7	194	195	196	197	198	0 0	7	200	201	202	203	204	200	200	0 0	9 0	200	200	7 7	1 7	7 7 7	513	214	215	216	217	218	219	220	221	222	1 0	773	224	225	226	227	228	4 6	7 7 7	2 6 6	100	200	233
						-																																																																							
Sequence 131, Ap Sequence 132, Ap Sequence 29406,	٠, و	'n	23	Sequence 38,	9,	ednence 76,	76	76	14	6	1	4 6	9 (33	ä	33	36	3	0 0	ח ה	9	36	36		2 6	ĕ	36	2	9 0	9	36	2	0 0	9	36	36	36	36	ייי	9	36	36	36	7	9	7	יי	ח מ	0 0	9 0	ence 36	0 0	200	ס כ	9 0	36	ō	36	36	36	36	36	equence 33	A GOLDEN		ednence 3e	equence 36	equence 36	ednence 36	equence 36	ance 36	educince ac	equence 36	SUCE TO	eduence 36	equence 36	ednence 36
Sequence 13. Sequence 13. Sequence 29.	Sequence 10,	Sequence 3.	Sequence 23	Sednence 38,	Sequence 76,	Sequence 76,	Seguence 76	Seguence 76	Seguence 14	PL entrement	or option	Sednence 14:	Sednence 19	Sednence 33	Seguence 330	Segmence 33	Seguence 36	Sec announces	se apriantas	sedneme se	Sednence 36	Seguence 360	Segmence 36	Secretary 33	Seducine 33	Sednence 330	Seguence 36	or orderwood	מבלתבוורם	sednence 3e	Sequence 36	Se annamas		Sednence 36	Sednence 36	Seguence 36	Seguence 36	Seguence 36	or opening	sednence 36	Seguence 36	Seguence 36	Segmence 36	Se apriation	Segmence 36	Section 26	or optional	occupation of	seduence so	Sequence 36	Sequence 36	Sednemes 20	Sednence 36	Sednence 36	Sednence 36	Sednence 36	Sequence 36	Seguence 36	Sequence 33	Se annaimas		sednence 3e	Sequence 36	Seguence 36	Seguence 36	Seguence 36	Section 36	or actioning	or acuantas	seduence 36	seduence 36	Sequence 36	Secretary AS				
Sequence 13. Sequence 13. Sequence 29.	Sequence 10,	Sequence 3.	Sequence 23	Sednence 38,	Sequence 76,	Sequence 76,	Seguence 76	Seguence 76	Seguence 14	PL entrement	or option	Sednence 14:	Sednence 19	Sednence 33	Seguence 33	Segmence 33	Seguence 36	Sec announces	se apriantas	sedneme se	Sednence 36	Seguence 360	Segmence 36	Secretary 33	Seducine 33	Sednence 330	Seguence 36	or orderwood	מבלתבוורם	Sednence 36	Sequence 36	Se annamas		Sednence 36	Sednence 36	Seguence 36	Seguence 36	Seguence 36	or opening	sednence 36	Seguence 36	Seguence 36	Segmence 36	Se apriation	Segmence 36	Section 26	or optional	occupation of	seduence so	Sequence 36	Sequence 36	Seducine 20	Sednence 36	Sednence 36	Sednence 36	Sednence 36	Sequence 36	Seguence 36	Sequence 33	Se annaimas		sednence 3e	Sequence 36	Seguence 36	Seguence 36	Seguence 36	Section 36	or actioning	or acuantas	seduence 36	seduence 36	Sequence 36	Secretary AS				
Sequence 13. Sequence 13. Sequence 29.	Sequence 10,	Sequence 3.	Sequence 23	Sednence 38,	Sequence 76,	Sequence 76,	Seguence 76	Seguence 76	Seguence 14	PL entrement	or option	Sednence 14:	Sednence 19	Sednence 33	Seguence 330	Segmence 33	Seguence 36	Sec announces	se apriantas	sedneme se	Sednence 36	Seguence 360	Segmence 36	Secretary 33	Seducine 33	Sednence 330	Seguence 36	or orderwood	מבלתבוורם	Sednence 36	Sequence 36	Se annamas		Sednence 36	Sednence 36	Seguence 36	Seguence 36	Seguence 36	or opening	sednence 36	Seguence 36	Seguence 36	Segmence 36	Se apriation	Segmence 36	Section 26	or optional	occupation of	seduence so	Sequence 36	Sequence 36	Seducine 20	Sednence 36	Sednence 36	Sednence 36	Sednence 36	Sequence 36	Seguence 36	Sequence 33	Se annaimas		sednence 3e	Sequence 36	Seguence 36	Seguence 36	Seguence 36	Section 36	or actioning	or acuantas	seduence 36	seduence 36	Sequence 36	Segmence 36				
US-09-847-208-131 Sequence 13: US-10-029-386-29406 Sequence 29:	US-09-728-670-10 Sequence 10,	US-10-190-414-3 Sequence 3.	US-10-071-751-23 Sequence 23	US-09-738-626-3842 Sequence 384	US-09-739-254-76 Sequence 76,	US-09-904-615-76 Sequence 76,	US-10-055-098-76 Seguence 76	US-10-054-988-76 Sequence 76	US-09-796-692-1450 Seguence 14	115 - 09 - 796 - 69 - 1900	110 - 04 - 04 - 04 - 04 - 04 - 04 - 04 -	US-IO-040-862-1450 Sequence 14:	US-10-040-862-1900 Sequence 19	US-09-946-374-336 Sequence 33	US-10-015-387A-336 Sequence 33	US-10-006-130A-336 Sequence 330	US-10-199-672-360 Seguence 360	110-10-006-1728-336 Semion 336	110 101 101 101 100 100 100 100 100 100	US-IO-IS'-/49-360 Sequence 36	US-10-194-457-360 Seguence 36	US-10-184-642-360 Seguence 360	US-10-196-747-360 Seguence 360	TIG-10-015-3928-336	מכר בייייים איני פיייים מיייים מייים מיייים מייים מיייים מייים מיייים מיייים מיייים מייים מיייים מיייים מיייים מיייים מייים	US-10-017-253A-336 Sequence 330	US-10-173-689-360 Sequence 36	TIC-10-172-600-260		08-10-1/3-691-360 seduence 360	US-10-173-692-360 Sequence 36	11S-10-173-694-360		08-10-1/3-698-360 Sequence 36	US-10-173-699-360 Sequence 36	US-10-173-707-360 Seguence 36	US-10-174-569-360 Sequence 36	US-10-174-583-360 Seguence 36	00 00 00 00 00 00 00 00 00 00 00 00 00	US-10-1/4-58/-360 Seduence 36	US-10-174-589-360 Sequence 36	US-10-174-591-360 Seguence 36	US-10-175-736-360 Sequence 36	11S-10-175-742-360 Semience 36	US-10-175-744-360 Seguence 36	115-10-175-745-360 Semience 36	118-10-175-749-360 Semion Company	10 10 11 11 12 12 12 12 12 12 12 12 12 12 12	02-10-10-10-10-10-10-10-10-10-10-10-10-10-	US-10-1/5-/54-360 Sequence 36	US-IU-I/6-480-360 Sequence 36	OSCITOTION OF THE SECOND OF TH	110 10 110 110 110 200 Seduence 36	US-10-1/6-/55-360 Sequence 36	US-IO-I/6-/59-360 Sequence 36	US-10-176-920-360 Sequence 36	US-10-176-922-360 Sequence 36	US-10-176-924-360 Sequence 36	US-10-176-984-360 Sequence 36	US-10-179-508-360 Sequence 36	US-10-179-512-360 Seguence 36	US-10-179-515-360 Sequence 36	US-10-017-306A-336 Sequence 33	TIS-10-173-702-360 Semiente 36		OS-10-1/3-/03-360 Seguence 36	US-10-173-704-360 Seguence 36	US-10-174-574-360 Seguence 36	US-10-176-486-360 Sequence 36	US-10-176-490-360 Seguence 36	US-10-176-752-360 Sequence 36	110 120 120 120 120 120 120 120 120 120	110-10-176-003-360 Sequence 36	110-110-176-900-360	02-T0-T0-T0-300 Seduence 30	US-10-1/9-51/-360 Seguence 36	US-10-179-521-360 Seguence 36
33 11 US-09-847-208-132 Sequence 13: 34 12 US-10-029-386-29406 Sequence 29:	36 9 US-09-728-670-10 Sequence 10,	36 12 US-10-190-414-3 Sequence 3.	37 14 US-10-071-751-23 Sequence 23	38 10 US-09-738-626-3842 Sequence 384	40 9 US-09-739-254-76 Sequence 76,	40 9 US-09-904-615-76 Sequence 76,	40 12 US-10-055-098-76 Sequence 76	40 15 US-10-054-988-76 Sequence 76	46 10 US-09-796-692-1450 Seguence 14	4 K 10 113-09-796-692-1900	24 CT	46 IS US-IU-040-862-1450 Sequence 14:	46 15 US-10-040-862-1900 Sequence 190	48 11 US-09-946-374-336 Sequence 33	48 12 US-10-015-387A-336 Sequence 33	48 12 US-10-006-130A-336 Seguence 330	48 12 US-10-199-672-360 Sequence 360	48 12 110-10-006-1728-334 Semione 334	40 TZ 00-T0-000-T/7W-220 20-00-00-00-00-00-00-00-00-00-00-00-00-0	to TZ CZ-TG-TG-TG-720 Sednence 20	48 12 US-10-194-457-360 sequence 36	48 12 US-10-184-642-360 Seguence 360	48 12 US-10-196-747-360 Segmence 360	48 12 IN-10-015-3428-336 Seminor 336	מכל ייניים מים מים מים מים מים מים מים מים מים	48 12 US-10-017-253A-336 Sequence 33	48 12 US-10-173-689-360 Seguence 36	12 110-173-600-360	מיני ביים ביים מיני מיני מיני מיני מיני מיני מיני מ	8 IZ US-IU-I/3-691-360 seduence 36	8 12 US-10-173-692-360 Sequence 36	8 12 10-173-694-360 Seminary 36		8 IZ 08-10-1/3-698-360 Sednence 36	8 12 US-10-173-699-360 Sequence 36	8 12 US-10-173-707-360 Sequence 36	8 12 US-10-174-569-360 Sequence 36	8 12 US-10-174-583-360 Seguence 36	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	8 IZ US-10-1/4-58/-360 Sequence 36	8 12 US-10-174-589-360 Seguence 36	8 12 US-10-174-591-360 Seguence 36	8 12 US-10-175-736-360 Segmence 36	R 12 IIS-10-175-740-360 Semience 36	8 12 US-10-175-744-360 Sequence 36	8 12 IIS-10-175-745-360 Semience 36	0 110 110 110 110 120 000 000 000 000 00	0 12 00 13 14 15 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0 TZ 03-T0-T0-T0-101-000	8 12 US-10-1/5-754-360 Sequence 36	8 IZ US-IU-I/6-480-360 Sequence 36	o trongerous occurrent of the second occurrence occurre	B IZ US-IU-I/6-/54-560 Sequence 36	8 IZ US-IU-I/6-/55-360 Sequence 36	8 12 US-10-1/6-/59-360 Sequence 36	8 12 US-10-176-920-360 Sequence 36	8 12 US-10-176-922-360 Sequence 36	8 12 US-10-176-924-360 Sequence 36	8 12 US-10-176-984-360 Sequence 36	8 12 US-10-179-508-360 Sequence 36	8 12 US-10-179-512-360 Sequence 36	8 12 US-10-179-515-360 Sequence 36	8 12 US-10-017-306A-336 Segmence 33	8 12 TIS-10-173-702-360 Secure 36		8 12 US-IU-I/3-/03-360 Seguence 36	8 12 US-10-173-704-360 Seguence 36	8 12 US-10-174-574-360 Seguence 36	8 12 US-10-176-486-360 Sequence 36	8 12 US-10-176-490-360 Segmence 36	8 12 US-10-176-752-360 Sequence 36	0 12 12 10 12 00 1 20 00 1 20 00 1 20 00 00 00 00 00 00 00 00 00 00 00 00	8 12 US-10-176-981-360 Seguence 36	0 12 US-IO-I/0-903-360 Sequence 30	8 IZ US-IU-I/8-988-390 Sequence 39	8 12 US-10-1/9-51/-360 Sequence 36	8 12 US-10-179-521-360 Seguence 36
.2 133 11 US-09-847-208-131 Sequence 13. .2 134 12 US-10-029-386-29406 Sequence 29.	.2 136 9 US-09-728-670-10 Sequence 10,	.2 136 12 US-10-190-414-3 Sequence 3.	.2 137 14 US-10-071-751-23 Sequence 23	.2 138 10 US-09-738-626-3842 Sequence 384	.2 140 9 US-09-739-254-76 Sequence 76,	.2 140 9 US-09-904-615-76 Sequence 76,	.2 140 12 US-10-055-098-76 Sequence 76	.2 140 15 US-10-054-988-76 Sequence 76	.2 146 10 US-09-796-692-1450 Seguence 14	2 146 10 IIS-09-796-692-1900 Seminor 19	171 OURSTEEN CONT. 170 OV. 170 OV. 171	. Ide 15 US-10-040-882-1450 Sequence 14:	.z 146 15 US-10-040-862-1900 Sequence 190	.2 148 11 US-09-946-374-336 Sequence 33	.2 148 12 US-10-015-387A-336 Sequence 330	.2 148 12 US-10-006-130A-336 Seguence 330	.2 148 12 US-10-199-672-360 Sequence 36	2 148 12 118-10-006-17-23-6 Seminaria 33-6	SC CONTROL OF TANK TO THE CONTROL OF	De aplication of the control of the	.z 148 12 US-10-194-457-360 Sequence 36	.2 148 12 US-10-184-642-360 Sequence 360	.2 148 12 US-10-196-747-360 Seguence 36	2 148 12 IIS-10-015-3928-336 Seminance 336	TO DOTTO DOT	.2 148 12 US-10-017-253A-336 Sequence 330	.2 148 12 US-10-173-689-360 Sequence 36	075-003-551-01-311 C1 071 C	000-000-00-00-00-00-00-00-00-00-00-00-0	.2 148 12 US-1U-1/3-691-360 Sequence 36	.2 148 12 US-10-173-692-360 Sequence 36	2 148 12 IIS-10-173-694-360 Semi-proce 369	000 000 000 000 000 000 000 000 000 00	.z 148 IZ US-10-1/3-698-360 Sequence 36	.2 148 12 US-10-173-699-360 Sequence 36	.2 148 12 US-10-173-707-360 Sequence 36	.2 148 12 US-10-174-569-360 Sequence 36	.2 148 12 US-10-174-583-360 Sequence 36	OF CONTROL OF CONTROL OF C	.2 148 12 US-10-174-587-360 Sequence 36	.2 148 12 US-10-174-589-360 Seguence 36	.2 148 12 US-10-174-591-360 Seguence 36	.2 148 12 US-10-175-736-360 Segmence 36	2 148 12 IIS-10-175-742-360 Semi-ence 36	2 148 12 US-10-175-744-360 Sequence 36	2 14.8 12 IIS-10-17E-74E-360	2 148 12 118-10-114-20-260 CASCONDERS 266	0. 1.40 1.01 1.10 1.01 0.00 0.00 0.00 0.	140 L2 US-10-173-701 Sequence 300	148 IX US-171-178-380 Sequence 38	.2 148 12 US-10-176-480-360 Sequence 36	OCCUPATION TO THE TOTAL OCCUPATION OF THE TOTAL OCCUPATION OCCUPAT	140 LV US-110-LVS-104-000 Sequence 30	.2 148 12 US-10-1/6-/55-350 Sequence 35	148 JA DS-10-10-10-10-10-10-10-10-10-10-10-10-10-	.2 148 12 US-10-176-920-360 Sequence 36	.2 148 12 US-10-176-922-360 Sequence 36	.2 148 12 US-10-176-924-360 Sequence 36	.2 148 12 US-10-176-984-360 Sequence 36	.2 148 12 US-10-179-508-360 Sequence 36	.2 148 12 US-10-179-512-360 Sequence 36	.2 148 12 US-10-179-515-360 Sequence 36	2 148 12 US-10-017-306A-336 Semience 33	2 148 12 TR-10-173-702-360 Semi-prop 361	CONTRACTOR	.2 148 12 US-10-173-703-360 Sequence 36	.2 148 12 US-10-173-704-360 Sequence 36	.2 148 12 US-10-174-574-360 Seguence 36	.2 148 12 US-10-176-486-360 Sequence 36	.2 148 12 US-10-176-490-360 Sequence 36	.2 148 12 US-10-176-752-360 Semience 36	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	.4 146 12 US-10-1/6-361-360 Sequence 36	140 12 US-IO-1/6-303-300 Sequence 30	.t 148 LZ US-LU-1/0-908-300 Sequence 30	.z 148 12 US-10-1/9-51/-360 Sequence 36	.2 148 12 US-10-179-521-360 Segmence 36
Sequence 13. Sequence 13. Sequence 29.	2.2 136 9 US-09-728-670-10 Sequence 10,	2.2 136 12 US-10-190-414-3 Sequence 3.	2.2 137 14 US-10-071-751-23 Sequence 23	2.2 138 10 US-09-738-626-3842 Sequence 38	2.2 140 9 US-09-739-254-76 Sequence 76,	2.2 140 9 US-09-904-615-76 Sequence 76,	2.2 140 12 US-10-055-098-76 Sequence 76	2.2 140 15 US-10-054-988-76 Sequence 76	2.2 146 10 US-09-796-692-1450 Sequence 14	2 2 146 10 IIS-09-796-692-1900 Semience 19	11 00100000 00111100 0011 011 011 011 0	2.2 146 15 08-10-040-862-1450 Sequence 14	2.2 146 15 US-10-040-862-1900 Sequence 190	2.2 148 11 US-09-946-374-336 Sequence 330	2.2 148 12 US-10-015-387A-336 Sequence 330	2.2 148 12 US-10-006-130A-336 Sequence 33	2.2 148 12 US-10-199-672-360 Sequence 36	2 2 148 12 11C-10-00C-1328 Semicance 336	S.C. THOUSE OCCUPANTS OF CONTROL	oec. 44/-/01-01 ZT 247 ZT 277	2.2 148 12 US-10-194-457-360 Sequence 36	2.2 148 12 US-10-184-642-360 Sequence 360	2.2 148 12 US-10-196-747-360 Segmence 360	2 2 148 12 IIC_IC_1C_2308_2346	TO DITTO THE COLUMN TO COL	2.2 148 12 US-10-017-253A-336 Sequence 330	2.2 148 12 US-10-173-689-360 Sequence 36	2	OCCUPATION OF COLUMN TO THE COLUMN TO COLUMN T	2.2 148 12 US-10-1/3-691-360 sequence 36	2.2 148 12 US-10-173-692-360 Sequence 36	2 2 148 12 HS-10-173-694-360 Seminence 36		Z.Z 148 IZ US-10-1/3-698-360 Sequence 36	2.2 148 12 US-10-173-699-360 Sequence 36	2.2 148 12 US-10-173-707-360 Sequence 36	2.2 148 12 US-10-174-569-360 Sequence 36	2.2 148 12 US-10-174-583-360 Segmence 36	OF COMMUNICATION OF COM	2.2 148 12 US-10-174-587-360 Sequence 36	2.2 148 12 US-10-174-589-360 Sequence 36	2.2 148 12 US-10-174-591-360 Seguence 36	2.2 148 12 US-10-175-736-360 Segmence 36	2 2 148 12 HS-10-175-742-360 Semience 36	2.2 148 12 US-10-175-744-360 Segmence 36	2 2 148 12 IIC-10-17E-74E-360 Semionice 36	0.0 C1.		7.7 1.40 12 102-1101-101 0 000-110-101 0 000-110-101 0 0 0 0	7.2 148 12 US-10-115-754-360 Sequence 36	2.2 148 12 US-IU-I/6-48U-36U Sequence 36	OCCUPATION THOU TO CONTRACT AND CONTRACT OF CONTRACT O	2.2 Tree is useful and in the control of the contro	Z.Z 148 1Z US-1U-1/6-/55-560 Sequence 35	2.2 148 12 US-110-170-1360 Sequence 36	2.2 148 12 US-10-176-920-360 Sequence 36	2.2 148 12 US-10-176-922-360 Sequence 36	2.2 148 12 US-10-176-924-360 Sequence 36	2.2 148 12 US-10-176-984-360 Sequence 36	2.2 148 12 US-10-179-508-360 Sequence 36	2.2 148 12 US-10-179-512-360 Sequence 36	2.2 148 12 US-10-179-515-360 Sequence 36	2.2 148 12 US-10-017-306A-336 Semience 33	2 2 148 12 118-10-173-702-360 Semisorce 36	OCCUPATION OF THE CONTRACT OF	2.2 148 12 US-10-173-703-360 Sequence 36	2.2 148 12 US-10-173-704-360 Sequence 36	2.2 148 12 US-10-174-574-360 Sequence 36	2.2 148 12 US-10-176-486-360 Sequence 36	2.2 148 12 US-10-176-490-360 Sequence 36	2.2 148 12 US-10-176-752-360 Sequence 36		2.2 148 12 US-10-1/6-981-360 Sequence 36	2.2 140 12 US-10-176-903-300 Sequence 30	7.2 Let US-INC-1705-500 Sequence 50	2.2 148 12 US-10-179-517-360 Sequence 36	2.2 148 12 US-10-179-521-360 Seguence 36

App App App App App App	Appl Appl Appl Appl Appl	App	App App App App	App App	Арр Арр Арр	App App App	App	App	Арр Арр Арр	App App App	App	App	App App	App	App	App App	App App	Арр Арр	App	App	App	App	App	Арр Арр Арр
	360,	360, 360, 360,	360, 360, 360,	360, 360, 336,	360, 360, 360,	360, 360, 360,	360,	360,	360, 360, 360,	360, 360, 360,	360,	360,	360,	360,	360,	360,	360, 360,	360, 360,	360, 360,	360,	360,	360,	360,	360, 360, 360,
			ence ence ence	equence equence	Sequence Sequence Sequence	sequence sequence sequence	ence	ence	sequence sequence sequence	ence	ence	ence	Sequence	ence	ence	ence	ence	ence	ence	ence	ence		ence	quence quence quence
Seduces Seduce		Seque	Sequenc Sequenc Sequenc Sequenc	Sequenc	Seque Seque	Seque	Seque	Seque	Seque Seque	Seque	Sequ	Sequ	Seque	Seque	Sequ	Seque	Seque	Seque	ա ա	Sequ	Sequ	667	e da	Seque
00000000	00000	0000	0000	. 9	000	000	000	000	000	000	000	000	000			00	00	00	00	00				000
76-916-360 779-507-360 779-516-360 779-516-360 80-546-360 81-006-360 83-006-360	19-36 19-36 18-36 25-36 26-36	25-36 55-36 55-36	75-36 52-36 45-36	95-36 94-36 56A-3	34-36 53-36 17-36	32-36 36-36 13-36	22-36	20-36	15-36 20-36 13-36	56-36(10-36(38-36)	55-36 19-36	30-36	15-36 94-36	35-36 35-36	99-36	30-36 39-36)0-36()5-36()8-36(54-36(58-36(39-36	96-36	11-36	7-36	55-36(56-36(59-36(
176-9: -179-5: -179-5: -179-5: -180-5: -183-0	288888	84-64 84-6 84-6	98-7 94-4(96-7	97-69 95-89	76-48 76-7	79-5(79-5	80-56	84-6 84-6 84-6	92-03 05-9	86-89 84-6	87-78	92-01	94-46	95-89	96-7	97-76	97-76	98-76	98-76	99-30	99-3	99-31	99-66
	20000	000	$\alpha \alpha \alpha \alpha$	-	$\sim \sim$	$\alpha \alpha \alpha$	\sim		\sim	$\alpha \alpha \alpha$	000	\sim	-	~ ~ ~	\circ	\sim	\sim	\sim	\sim	\sim		· ~ ^	-10-1	10-1
. ហ ហ ហ ហ ហ ហ ហ ហ ហ	ນດນດນດ	លេលលេស	വവവവ	លលល	ហហហ	ហហហ	மைம	ព្រះព្រ	വവവ	നവ	ហហហ	ப்பை	ហហប	വ	ហល	ഹഗ	ഹഹ	ഗവ	ហស	ហស	ı LO U	n ın ı		
					60 60 60			രയയ	ന ന ന		0000		ω ω α	0000	000	80 80		œ œ	œ œ	co co	000	0 00 0	4 8 8	488 488 111
аналалан.		1444					~ ~ -	444				1	-		. – –			el el		ਜਜ				
																	• •							
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	ນູູູູູູູູູູູ		0000	φφφ	999	6 60 60	994		999	6 6 9 9	φφφ	999	o o u	9 99 9	999	99	9 9	9 9	99	99	9		و م	999
308 3109 3110 3113 3115	318 318 320 320 321	323 324 325 326	327 328 329 330	331 332 333	334 335 336	337 338 339	340	3 4 4 4	345 346 347	348 349 350	351	354	357	359	361	363	365	367	369	371	373	375	377	378 379 380
App App App App App App App App	APP APP APP APP APP	App App App App	App App App App	App App App	App App App	App App App	App App	App	App App App	App App App	App App App	App App	App App App	App App	App	App App	App App	App App	App App	App	App	App	App App	App App App
360, App 360, App 360, App 360, App 360, App 360, App 360, App	0000	60,	0000	000	000		60,	000	000	, 60, 60,	000	000	000	, 09	60,	60,	60,	60,	09	60,	000		000	
	360,	360,	360,	360, 360, 360,	360,	360, 360,	360,	360,	360,	360, 360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360, 360, 360,
	360,	360,	360,	360, 360, 360,	360,	360, 360,	360,	360,	360,	360, 360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360, 360, 360,
	360,	360,	360,	360, 360, 360,	360,	360, 360,	360,	360,	360,	360, 360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360, 360, 360,
Sequence 360, Se	Sequence 360, Sequence 360, Sequence 360, Sequence 360, Sequence 360, Sequence 360,	Sequence 360, Sequence 360, Sequence 360, Sequence 360,	Sequence 360, Sequence 360, Sequence 360, Sequence 360,	Sequence 360, Sequence 360, Sequence 360,	Sequence 360, Sequence 360, Sequence 360,	Sequence 360, Sequence 360, Sequence 360,	Sequence 360, Sequence 360,	Sequence 360, Sequence 360,	Sequence 360, Sequence 360, Sequence 360,	Sequence 360, Sequence 360, Sequence 360,	Sequence 360, Sequence 360, Sequence 360,	Sequence 360, Sequence 360,	Sequence 360, Sequence 360, Sequence 360,	Sequence 360, Sequence 360,	Sequence 360, Sequence 360,	Sequence 360, Sequence 360,	Sequence 360, Sequence 360,	Sequence 360, Sequence 360,	Sequence 360, Sequence 360,	Sequence 360, Sequence 360.	Sequence 360,	Sequence 360,	Sequence 360, Sequence 360,	Sequence 360, Sequence 360, Sequence 360,
360 Sequence 360, 260 Sequence	150 Sequence 360, 1360 Sequence 360, 1360 Sequence 360, 1360 Sequence 360, 1360 Sequence 360, 1360 Sequence 360,	360 Sequence 360, 360 Sequence 360, 360 Sequence 360, 360 Sequence 360,	360 Sequence 360, 360 Sequence 360, 360 Sequence 360, 360 Sequence 360,	360 Sequence 360, 360 Sequence 360, 360 Sequence 360,	360 Sequence 360, 360 Sequence 360, 360 Sequence 360,	360 Sequence 360, 360 Sequence 360, 360 Sequence 360, 360	360 Sequence 360, 360 Sequence 360, 360, 360	360 Sequence 360, 360 Sequence 360, 360, 360, 360, 360, 360, 360, 360,	.360 Sequence 360, .360 Sequence 360, .360 Sequence 360,	360 Sequence 360, 360 Sequence 360, 360 Sequence 360,	360 Sequence 360, 360 Sequence 360, 360	360 Sequence 360, 360 Sequence 360,	360 Sequence 360, 360 Sequence 360, 360, 360	360 Sequence 360, 360 Sequence 360.	360 Sequence 360, 360	360 Sequence 360, 360	360 Sequence 360, 360, 360, 360, 360, 360, 360, 360,	360 Sequence 360, 360	360 Sequence 360, 360 Sequence 360,	.360 Sequence 360,	360 Sequence 360,	360 Sequence 360,	360 Sequence 360,	360 Sequence 360, 360 Sequence 360, 360 Sequence 360,
80-555-360 Sequence 360, 80-559-360 Sequence 360, 81-559-360 Sequence 360, 83-010-360 Sequence 360, 84-614-360 Sequence 360, 84-633-360 Sequence 360, 84-635-360 Sequence 360, 84-637-360 Sequence 3	44-940-300 Sequence 360, 84-647-360 Sequence 360, 84-652-360 Sequence 360, 87-594-360 Sequence 360, 87-596-360 Sequence 360, 87-596-360 Sequence 360,	87-885-360 Sequence 360, 7-886-360 Sequence 360, 99-464-360 Sequence 360, 96-756-360 Sequence 360,	76-751-360 Sequence 360, 76-760-360 Sequence 360, 76-990-360 Sequence 360, 80-541-360 Sequence 360,	80-542-360 Sequence 360, 80-548-360 Sequence 360, 80-551-360 Sequence 360,	80-998-360 Sequence 360, 80-999-360 Sequence 360, 83-013-360 Sequence 360,	84-612-360 Sequence 360, 84-616-360 Sequence 360, 84-617-360 Sequence 360,	84-622-360 Sequence 360, 84-628-360 Sequence 360, 84-629-360 Sequence 360,	84-631-360 Sequence 360, Seque	84-636-360 Sequence 360, 84-636-360 Sequence 360, 84-640-360 Sequence 360,	84-650-360 Sequence 360, 84-651-360 Sequence 360, 37-588-360 Sequence 360,	37-597-360 Sequence 360, 37-598-360 Sequence 360, 37-600-360	87-601-360 Sequence 360, 57-602-360 Sequence 360, 57-602-360	37-503-360 Sequence 360, 37-741-360 Sequence 360, 37-743-360 Sequence 360, 37-743-360	37-746-360 Sequence 360, 37-747-360 Sequence 360,	87-751-360 Sequence 360, 87-753-360 Sequence 360,	87-754-360 Sequence 360, 87-757-360 Sequence 360,	87-884-360 Sequence 360, 88-767-360 Sequence 360,	88-769-360 Sequence 360, 38-770-360 Sequence 360,	38-773-360 Sequence 360, 38-781-360 Sequence 360,	94-361-360 Sequence 360, 94-423-360 Sequence 360.	95-897-360 Sequence 360,	95-901-300 Sequence 360, 35-90-360 Sequence 360, 360, 360, 360, 360, 360, 360, 360,	96-743-350 Sequence 350, 36-760-360	73-708-360 Sequence 360, 76-479-360 Sequence 360, 76-748-360 Sequence 360, 76-748-360
-180-555-360 Sequence 360, 1180-559-360 Sequence 360, 1181-600-360 Sequence 360, 1181-619-360 Sequence 360, 1181-613-360 Sequence 360, 1184-614-360 Sequence 360, 1184-635-360 Sequence 360, 1184-637-360 Sequence	7.184-647-360 Sequence 360, -184-652-360 Sequence 360, -187-594-360 Sequence 360, -187-594-360 Sequence 360, -187-745-360 Sequence 360,	0-187-885-360 sequence 360, 0-187-886-360 sequence 360, 1-199-464-360 sequence 360, 0-196-756-360 sequence 360,	176-751-360 Sequence 360, 0-176-760-360 Sequence 360, 176-990-360 Sequence 360, 180-541-360 Sequence 360,)-180-542-360 Sequence 360,)-180-548-360 Sequence 360,)-180-551-360 Sequence 360,)-180-998-360 Sequence 360,)-180-999-360 Sequence 360,)-183-013-360 Sequence 360,	0-184-612-360 Sequence 360, 0-184-616-360 Sequence 360, 0-184-617-360 Sequence 360,	3-184-622-360 Sequence 360, 3-184-628-360 Sequence 360, 1-184-629-360 Sequence 360,	1-184-630-360 Sequence 360, 1-184-631-360 Sequence 360, 1-184-631-360 Sequence 360, 1-184-631-360	-184-632-360 Sequence 360, -184-636-360 Sequence 360, -184-640-360 Sequence 360,	0-184-650-360 Sequence 360, 0-184-651-360 Sequence 360, 0-187-588-360 Sequence 360,	360, 187-597-360 Sequence 360, 187-598-360 Sequence 360, 187-500-360 Sequence 360, 187-600-360)-187-601-360 Sequence 360, 1-187-602-360 Sequence 360,	1-187-603-360 Sequence 360, 1-187-741-360 Sequence 360, 177-741-360 Sequence 360,	187-746-360 Sequence 360, 187-747-360 Sequence 360,)-187-751-360 Sequence 360, 187-753-360 Sequence 360,)-187-754-360 Sequence 360,)-187-757-360 Sequence 360,)-187-884-360 Sequence 360, 3-188-767-360 Sequence 360,)-188-769-360 Sequence 360,)-188-773-360 Sequence 360,	0-194-361-360 Sequence 360, 0-194-423-360 Sequence 360, 0-194-423-360	1-195-897-360 Sequence 360,	1195-902-360 Sequence 360, 195-902-360	196-760-360 Sequence 360,)-173-708-360 Sequence 360, -176-479-360 Sequence 360, -176-748-360 Sequence 360,
5 US-10-180-555-360 Sequence 360, 55 US-10-180-559-360 Sequence 360, 55 US-10-181-000-360 Sequence 360, 55 US-10-183-010-360 Sequence 360, 55 US-10-183-012-360 Sequence 360, 55 US-10-184-613-360 Sequence 360, 55 US-10-184-635-360 Sequence 360, 55 US-10-184-637-360 Sequence 360, 55 US-10-184-637-	5 US-10-184-647-360 Sequence 360, 55 US-10-184-647-360 Sequence 360, 55 US-10-184-652-360 Sequence 360, 55 US-10-187-594-360 Sequence 360, 55 US-10-187-745-360 Sequence 360, 56 US-10-187-745-	5 US-10-187-885-360 Sequence 360, 5 US-10-187-886-360 Sequence 360, 5 US-10-199-464-360 Sequence 360, 5 US-10-196-756-360 Sequence 360,	5 US-10-176-751-360 Sequence 360, 5 US-10-176-760-360 Sequence 360, 5 US-10-176-990-360 Sequence 360, 5 US-10-180-541-360 Sequence 360,	5 US-10-180-542-360 Sequence 360, 5 US-10-180-548-360 Sequence 360, 5 US-10-180-551-360 Sequence 360,	5 US-10-180-998-360 Sequence 360, 5 US-10-180-999-360 Sequence 360, 5 US-10-183-013-360 Sequence 360,	5 US-10-184-612-360 Sequence 360, 5 US-10-184-616-360 Sequence 360, 5 US-10-184-617-360 Sequence 360,	5 US-10-184-622-360 Sequence 360, SUS-10-184-628-360 Sequence 360, SIS-10-184-628-360 Sequence 3.60, SIS-10-184-629-360	US-10-184-631-360 Sequence 360, US-10-184-631-360 Sequence 360	5 US-10-184-634-360 Sequence 360, US-10-184-636-360 Sequence 360, 5 US-10-184-640-360 Sequence 360,	5 US-10-184-650-360 Sequence 360, 5 US-10-184-651-360 Sequence 360, 5 US-10-187-588-360 Sequence 360,	5 US-10-187-597-360 Sequence 360, 5 US-10-187-598-360 Sequence 360, 10S-10-187-600-360 Sequence 360,	S US-10-187-601-360 Sequence 360, US-10-187-602-360 Sequence 360, US-10-187-602-360	5 US-10-187-603-360 Sequence 360, 5 US-10-187-741-360 Sequence 360, 5 US-10-187-743-360 Sequence 360,	5 US-10-187-746-360 Sequence 360, 5 US-10-187-747-360 Sequence 360,	5 US-10-187-751-360 Sequence 360, US-10-187-753-360 Sequence 360,	5 US-10-187-754-360 Sequence 360, 5 US-10-187-757-360 Sequence 360,	5 US-10-187-884-360 Sequence 360, 5 US-10-188-767-360 Sequence 360,	5 US-10-188-769-360 Sequence 360, 5 US-10-188-770-360 Sequence 360,	5 US-10-188-773-360 Sequence 360, 5 US-10-188-781-360 Sequence 360,	5 US-10-194-361-360 Sequence 360, Sequence 360, Sequence 360.	5 US-10-195-897-360 Sequence 360,	US-10-105-902-360 Sequence 360, 150-10-195-902-360	5 US-10-196-760-360 Sequence 360, 35 US-10-196-760-360 Sequence 360, 360	5 US-10-173-708-360 Sequence 360, 5 US-10-176-479-360 Sequence 360, 5 US-10-176-748-360 Sequence 360,
48 15 US-10-180-555-360 Sequence 360, 48 15 US-10-180-559-360 Sequence 360, 48 15 US-10-181-000-360 Sequence 360, 48 15 US-10-183-010-360 Sequence 360, 48 15 US-10-183-012-360 Sequence 360, 48 15 US-10-184-614-360 Sequence 360, 48 15 US-10-184-635-360 Sequence 360, 48 15 US-10-184-637-360 Sequence 360, 48 US-10-184-637-360 Sequen	48 15 US-10-184-647-360 Sequence 360, 48 15 US-10-184-647-360 Sequence 360, 48 15 US-10-184-652-360 Sequence 360, 48 15 US-10-187-594-360 Sequence 360, 48 15 US-10-187-756-360 Sequence 360, 48 15 US-10-187-756-360 Sequence 360,	48 15 US-10-187-885-360 Sequence 360, 48 15 US-10-187-886-360 Sequence 360, 48 15 US-10-199-464-360 Sequence 360, 48 15 US-10-196-756-360 Sequence 360,	48 15 US-10-176-751-360 Sequence 360, 48 15 US-10-176-760-360 Sequence 360, 48 15 US-10-176-990-360 Sequence 360, 48 15 US-10-180-541-360 Sequence 360,	48 15 US-10-180-542-360 Sequence 360, 48 15 US-10-180-548-360 Sequence 360, 48 15 US-10-180-551-360 Sequence 360,	48 15 US-10-180-998-360 Sequence 360, 48 15 US-10-180-999-360 Sequence 360, 48 15 US-10-183-013-360 Sequence 360,	48 15 US-10-184-612-360 Sequence 360, 48 15 US-10-184-616-360 Sequence 360, 48 15 US-10-184-617-360 Sequence 360,	48 15 US-10-184-622-360 Sequence 360, 48 15 US-10-184-628-360 Sequence 360, 48 15 US-10-184-628-360 Sequence 360, 48 15 US-10-184-628-360	48 15 US-10-184-630-360 Sequence 360.	48 15 US-1U-184-625-360 Sequence 360, 48 15 US-10-184-665-360 Sequence 360, 48 15 US-10-184-640-360 Sequence 360,	48 15 US-10-184-650-360 Sequence 360, 48 15 US-10-184-651-360 Sequence 360, 48 15 US-10-187-588-360 Sequence 360,	48 15 US-10-187-597-360 Sequence 360, 48 15 US-10-187-598-360 Sequence 360, 48 15 US-10-187-600-360 Sequence 360,	48 15 US-10-187-601-360 Sequence 360, 48 15 US-10-187-602-360 Sequence 360, 48 15 US-10-187-602-360 Sequence 360,	48 15 US-10-187-503-360 Sequence 360, 88 15 US-10-187-741-360 Sequence 360, 48 15 US-10-187-743-360 Sequence 360,	48 15 US-10-187-746-360 Sequence 360, 48 15 US-10-187-747-360 Sequence 360,	48 15 US-10-187-751-360 Sequence 360, 48 15 US-10-187-753-360 Sequence 360,	48 15 US-10-187-754-360 Sequence 360, 49 15 US-10-187-757-360 Sequence 360,	48 15 US-10-187-884-360 Sequence 360, 48 15 US-10-188-767-360 Sequence 360,	48 15 US-10-188-769-360 Sequence 360, 48 15 US-10-188-770-360 Sequence 360,	48 15 US-10-188-773-360 Sequence 360, 48 15 US-10-188-781-360 Sequence 360,	48 15 US-10-194-361-360 Seguence 360, 48 15 US-10-194-423-360 Seguence 360.	48 15 US-10-195-897-360 Sequence 360,	48 15 US-10-195-902-360 Sequence 360, 15 US-10-195-902-360	48 15 US-10-136-743-360 Sequence 360,	48 15 US-10-173-708-360 Sequence 360, 48 15 US-10-176-479-360 Sequence 360, 48 15 US-10-176-748-360 Sequence 360,
148 15 US-10-180-555-360 Sequence 360, 148 15 US-10-1810-559-360 Sequence 360, 148 15 US-10-181-000-360 Sequence 360, 148 15 US-10-183-010-360 Sequence 360, 148 15 US-10-184-614-360 Sequence 360, 148 15 US-10-184-614-360 Sequence 360, 148 15 US-10-184-635-360 Sequence 360, 148 15 US-10-184-	148 15 US-10-184-647-360 Sequence 360, 148 15 US-10-184-652-360 Sequence 360, 148 15 US-10-184-52-360 Sequence 360, 148 15 US-10-187-594-360 Sequence 360, 148 15 US-10-187-596-360 Sequence 360, 148 15 US-10-187-756-360 Sequence 360, 148 15 US-10-187-756-360 Sequence 360, 148 15 US-10-187-756-360	148 15 US-10-187-885-360 Sequence 360, 148 15 US-10-187-886-360 Sequence 360, 148 15 US-10-199-464-360 Sequence 360, 148 15 US-10-196-756-360 Sequence 360, 148 15 US-10-196-756-360	148 15 US-10-176-751-360 Sequence 360, 148 15 US-10-176-760-360 Sequence 360, 148 15 US-10-176-990-360 Sequence 360, 148 15 US-10-180-541-360 Sequence 360,	148 15 US-10-180-542-360 Sequence 360, 148 15 US-10-180-548-360 Sequence 360, 148 15 US-10-180-551-360 Sequence 360,	148 15 US-10-180-998-360 Sequence 360, 148 15 US-10-180-999-360 Sequence 360, 148 15 US-10-183-013-360 Sequence 360,	148 15 US-10-184-612-360 Sequence 360, 148 15 US-10-184-616-360 Sequence 360, 148 15 US-10-184-617-360 Sequence 360,	148 15 US-10-184-622-360 Sequence 360, 148 15 US-10-184-628-360 Sequence 360, 148 15 US-10-184-628-360 Sequence 360, 148 15 US-10-184-628-360	148 15 US-10-184-630-360 Sequence 360.	148 15 US-1U-184-652-360 Sequence 360, 148 15 US-10-184-640-360 Sequence 360, 148 15 US-10-184-640-360	148 15 US-10-184-650-360 Sequence 360, 148 15 US-10-184-651-360 Sequence 360, 148 15 US-10-187-588-360 Sequence 360,	148 15 US-10-187-597-360 Sequence 360, 148 15 US-10-187-598-360 Sequence 360, 148 15 US-10-187-600-360 Sequence 360, 148 US-10-187-600-360 Sequence 360, 148 US-10-187-600-360	148 15 US-10-187-601-360 Sequence 360, 148 15 US-10-187-602-360 Sequence 360, 148 15 US-10-187-602-360	148 15 US-1U-187-6U3-360 Sequence 360, 148 15 US-10-187-741-360 Sequence 360, 148 15 US-10-187-743-360 Sequence 360,	148 15 US-10-187-746-360 Sequence 360, 148 15 US-10-187-747-360 Sequence 360,	148 15 US-10-187-751-360 Sequence 360, 148 15 US-10-187-753-360 Sequence 360,	148 15 US-10-187-754-360 Sequence 360, 148 15 US-10-187-757-360 Sequence 360,	148 15 US-10-187-884-360 Sequence 360, 148 15 US-10-188-767-360 Sequence 360,	148 15 US-10-188-769-360 Sequence 360, 148 15 US-10-188-770-360 Sequence 360,	148 15 US-10-188-773-360 Sequence 360, 148 15 US-10-188-781-360 Sequence 360,	148 15 US-10-194-361-360 Sequence 360, 148 15 US-10-194-423-360 Sequence 360.	148 15 US-10-195-897-360 Sequence 360,	148 15 US-10-195-902-360 Sequence 360,	148 15 US-10-196-760-360 Sequence 360,	148 15 US-10-173-708-360 Sequence 360, 148 15 US-10-176-479-360 Sequence 360, 148 15 US-10-176-748-360 Sequence 360,
48 15 US-10-180-555-360 Sequence 360, 48 15 US-10-180-559-360 Sequence 360, 48 15 US-10-181-000-360 Sequence 360, 48 15 US-10-183-010-360 Sequence 360, 48 15 US-10-183-012-360 Sequence 360, 48 15 US-10-184-614-360 Sequence 360, 48 15 US-10-184-635-360 Sequence 360, 48 15 US-10-184-637-360 Sequence 360, 48 US-10-184-637-360 Sequen	. 148 15 US-10-184-647-360 Sequence 360, 248 15 US-10-184-652-360 Sequence 360, 248 15 US-10-184-552-360 Sequence 360, 248 15 US-10-187-594-360 Sequence 360, 248 15 US-10-187-745-360 Sequence 360, 248 15 US-10-187-745-360 Sequence 360, 25 US-10-187-745-360 Sequ	.2 148 15 US-10-187-885-360 Sequence 360, 2 148 15 US-10-187-886-360 Sequence 360, 2 148 15 US-10-199-464-360 Sequence 360, 2 148 15 US-10-196-756-360 Sequence 360,	.2 148 15 US-10-176-751-360 Sequence 360, 2 148 15 US-10-176-760-360 Sequence 360, .2 148 15 US-10-176-990-360 Sequence 360, .2 148 15 US-10-176-990-360 Sequence 360,	.2 148 15 US-10-180-542-360 Sequence 360, .2 148 15 US-10-180-548-360 Sequence 360, .2 148 15 US-10-180-551-360 Sequence 360,	.2 148 15 US-10-180-998-360 Sequence 360, .2 148 15 US-10-180-999-360 Sequence 360, .2 148 15 US-10-183-013-360 Sequence 360,	.2 148 15 US-10-184-612-360 Sequence 360, 2 148 15 US-10-184-616-360 Sequence 360, .2 148 15 US-10-184-616-360 Sequence 360,	.2 148 15 US-10-184-622-360 Sequence 360, 2 148 15 US-10-184-628-360 Sequence 360, 2 148 15 US-10-184-628-360 Sequence 360, 2 148 15 US-10-184-628-360	.2 148 15 US-10-184-630-360 Sequence 360.	. 148 15 US-10-184-632-360 Sequence 360, 2 148 15 US-10-184-640-360 Sequence 360, 2 148 15 US-10-184-640-360	.2 148 15 US-10-184-650-360 Sequence 360, 2 148 15 US-10-184-651-360 Sequence 360, 2 148 15 US-10-187-588-360 Sequence 360,	.2 148 15 US-10-187-597-360 Sequence 360, 2 148 15 US-10-187-598-360 Sequence 360, 2 148 15 US-10-187-600-360 Sequence 360, 2 148 15 US-10-187-600-360 Sequence 360, 360	.2 148 15 US-10-187-601-360 Sequence 360, .2 148 15 US-10-187-602-360 Sequence 360,	.2 148 15 US-11-187-603-360 Sequence 360, 2 148 15 US-10-187-741-360 Sequence 360, 2 148 15 US-10-187-743-360 Sequence 360, 2	.2 148 15 US-10-187-746-360 Sequence 360, .2 148 15 US-10-187-747-360 Sequence 360,	.2 148 15 US-10-187-751-360 Sequence 360, .2 148 15 US-10-187-753-360 Sequence 360,	.2 148 15 US-10-187-754-360 Sequence 360, .2 149 15 US-10-187-757-360 Sequence 360,	.2 148 15 US-10-187-884-360 Sequence 360, .2 148 15 US-10-188-767-360 Sequence 360,	.2 148 15 US-10-188-769-360 Sequence 360, .2 148 15 US-10-188-770-360 Sequence 360,	.2 148 15 US-10-188-773-360 Sequence 360, .2 148 15 US-10-188-781-360 Sequence 360, .	.2 148 15 US-10-194-361-360 Sequence 360, .2 148 15 US-10-194-423-360 Sequence 360.	2 148 15 US-10-195-897-360 Sequence 360,	.2 148 15 US-10-195-902-360 Sequence 360, 148 15 US-10-105-902-360	.2 148 15 US-10-159-743-360 Sequence 360,	.2 148 15 US-10-173-708-360 Sequence 360, .2 148 15 US-10-176-479-360 Sequence 360, .2 148 15 US-10-176-748-360 Sequence 360, .
2 148 15 US-10-180-555-360 Sequence 360, 2148 15 US-10-180-559-360 Sequence 360, 2148 15 US-10-181-00-360 Sequence 360, 2148 15 US-10-183-010-360 Sequence 360, 2148 15 US-10-183-012-360 Sequence 360, 2148 15 US-10-184-614-360 Sequence 360, 2148 15 US-10-184-635-360 Sequence 360, 2148 15 US-10-184-637-360 Sequence 360, 2148 15 US-10-184 15 US-	2.2 148 15 US-10-184-647-360 Sequence 360, 2.2 148 15 US-10-184-652-360 Sequence 360, 2.2 148 15 US-10-184-652-360 Sequence 360, 2.2 148 15 US-10-187-594-360 Sequence 360, 2.2 148 15 US-10-187-756-360 Sequence 360, 2.2 148 15 US-10-187-756-360 Sequence 360, 2.2 148 US-10-187-745-360 Se	2.2 148 15 US-10-187-885-360 Sequence 360, 2.2 148 15 US-10-187-886-360 Sequence 360, 2.2 148 15 US-10-199-464-360 Sequence 360, 2.2 148 15 US-10-196-756-360 Sequence 360,	2.2 148 15 US-10-176-751-360 Sequence 360, 2.2 148 15 US-10-176-990-360 Sequence 360, 2.2 148 15 US-10-176-990-360 Sequence 360, 2.2 148 15 US-10-180-541-360 Sequence 360, 2.2 148 15 US-10-180-541-360	2.2 148 15 US-10-180-542-360 Sequence 360, 2.2 148 15 US-10-180-548-360 Sequence 360, 2.2 148 15 US-10-180-551-360 Sequence 360,	2.2 148 15 US-10-180-998-360 Sequence 360, 2.2 148 15 US-10-180-999-360 Sequence 360, 2.2 148 15 US-10-183-013-360 Sequence 360,	2.2 148 15 US-10-184-612-360 Sequence 360, 2.2 148 15 US-10-184-616-360 Sequence 360, 2.2 148 15 US-10-184-617-360 Sequence 360,	2.2 148 15 US-10-184 622-360 Sequence 360, 2.2 148 15 US-10-184 628-360 Sequence 360, 2.2 148 15 US-10-184 628-360 Sequence 360, 2.2 148 15 US-10-184 628-360	2.2 148 15 US-10-184-630-360 Sequence 360.	2.2 148 15 US-1U-184 602-360 Sequence 360, 2.2 148 15 US-10-184 640-360 Sequence 360, 2.2 148 15 US-10-184-640-360	2.2 148 15 US-10-184-650-360 Sequence 360, 2.2 148 15 US-10-184-651-360 Sequence 360, 2.2 148 15 US-10-187-588-360 Sequence 360,	2.2 148 15 US-10-187-597-360 Sequence 360, 2.2 148 15 US-10-187-598-360 Sequence 360, 2.2 148 15 US-10-187-600-360 Sequence 360, 2.2	2.2 148 15 US-10-187-601-360 Sequence 360, 2.2 148 15 US-10-187-602-360 Sequence 360,	2.2 148 15 US-1U-187-6U3-360 Sequence 360, 2.2 148 15 US-1U-187-741-360 Sequence 360, 2.2 148 15 US-1U-187-743-360 Sequence 360, 2.2	2.2 148 15 US-10-187-746-360 Sequence 360, 2.2 148 15 US-10-187-747-360 Sequence 360,	2.2 148 15 US-10-187-751-360 Sequence 360, 2.2 148 15 US-10-187-753-360 Sequence 360,	2.2 148 15 US-10-187-754-360 Sequence 360, 2.2 148 15 US-10-187-757-360 Sequence 360,	2.2 148 15 US-10-187-884-360 Sequence 360, 2.2 148 15 US-10-188 767-360 Sequence 360,	2.2 148 15 US-10-188'769-360 Sequence 360, 2.2 148 15 US-10-188-770-360 Sequence 360,	2.2 148 15 US-10-188-773-360 Sequence 360, 2.2 148 15 US-10-188-781-360 Sequence 360,	2.2 148 15 US-10-194-361-360 Sequence 360, 2.2 148 15 US-10-194-423-360 Sequence 360.	2.2 148 15 US-10-195-897-360 Sequence 360,	2.2 148 15 US-10-195-901-300 Sequence 360, 30, 31, 40 15 US-10-195-902-360	2.2 148 15 US-10-196-743-360 Sequence 360,	2.2 148 15 US-10-173-708-360 Sequence 360, 2.2 148 15 US-10-176-479-360 Sequence 360, 2.2 148 15 US-10-176-748-360 Sequence 360,
2.2 148 15 US-10-180-555-360 Sequence 360, 2.2 148 15 US-10-180-559-360 Sequence 360, 2.2 148 15 US-10-181-000-360 Sequence 360, 2.2 148 15 US-10-183-010-360 Sequence 360, 2.2 148 15 US-10-183-012-360 Sequence 360, 2.2 148 15 US-10-184-614-360 Sequence 360, 2.2 148 15 US-10-184-635-360 Sequence 360, 2.2 148 15 US-10-184-635-	2.2 148 15 US-10-184-647-360 Sequence 360, 2.2 148 15 US-10-184-652-360 Sequence 360, 2.2 148 15 US-10-184-652-360 Sequence 360, 2.2 148 15 US-10-187-594-360 Sequence 360, 2.2 148 15 US-10-187-756-360 Sequence 360, 2.2 148 15 US-10-187-756-360 Sequence 360, 2.2 148 US-10-187-745-360 Se	2.2 148 15 US-10-187-885-360 Sequence 360, 2.2 148 15 US-10-187-886-360 Sequence 360, 2.2 148 15 US-10-199-464-360 Sequence 360, 2.2 148 15 US-10-196-756-360 Sequence 360,	2.2 148 15 US-10-176-751-360 Sequence 360, 2.2 148 15 US-10-176-990-360 Sequence 360, 2.2 148 15 US-10-176-990-360 Sequence 360, 2.2 148 15 US-10-180-541-360 Sequence 360, 2.2 148 15 US-10-180-541-360	2.2 148 15 US-10-180-542-360 Sequence 360, 2.2 148 15 US-10-180-548-360 Sequence 360, 2.2 148 15 US-10-180-551-360 Sequence 360,	2.2 148 15 US-10-180-998-360 Sequence 360, 2.2 148 15 US-10-180-999-360 Sequence 360, 2.2 148 15 US-10-183-013-360 Sequence 360,	2.2 148 15 US-10-184-612-360 Sequence 360, 2.2 148 15 US-10-184-616-360 Sequence 360, 2.2 148 15 US-10-184-617-360 Sequence 360,	2.2 148 15 US-10-184 622-360 Sequence 360, 2.2 148 15 US-10-184 628-360 Sequence 360, 2.2 148 15 US-10-184 628-360 Sequence 360, 2.2 148 15 US-10-184 628-360	2.2 148 15 US-10-184-630-360 Sequence 360.	2.2 148 15 US-1U-184 602-360 Sequence 360, 2.2 148 15 US-10-184 640-360 Sequence 360, 2.2 148 15 US-10-184-640-360	2.2 148 15 US-10-184-650-360 Sequence 360, 2.2 148 15 US-10-184-651-360 Sequence 360, 2.2 148 15 US-10-187-588-360 Sequence 360,	2.2 148 15 US-10-187-597-360 Sequence 360, 2.2 148 15 US-10-187-598-360 Sequence 360, 2.2 148 15 US-10-187-600-360 Sequence 360, 2.2	2.2 148 15 US-10-187-601-360 Sequence 360, 2.2 148 15 US-10-187-602-360 Sequence 360,	2.2 148 15 US-1U-187-6U3-360 Sequence 360, 2.2 148 15 US-1U-187-741-360 Sequence 360, 2.2 148 15 US-1U-187-743-360 Sequence 360, 2.2	2.2 148 15 US-10-187-746-360 Sequence 360, 2.2 148 15 US-10-187-747-360 Sequence 360,	2.2 148 15 US-10-187-751-360 Sequence 360, 2.2 148 15 US-10-187-753-360 Sequence 360,	2.2 148 15 US-10-187-754-360 Sequence 360, 2.2 148 15 US-10-187-757-360 Sequence 360,	2.2 148 15 US-10-187-884-360 Sequence 360, 2.2 148 15 US-10-188 767-360 Sequence 360,	2.2 148 15 US-10-188'769-360 Sequence 360, 2.2 148 15 US-10-188-770-360 Sequence 360,	2.2 148 15 US-10-188-773-360 Sequence 360, 2.2 148 15 US-10-188-781-360 Sequence 360,	2.2 148 15 US-10-194-361-360 Sequence 360, 2.2 148 15 US-10-194-423-360 Sequence 360.	2.2 148 15 US-10-195-897-360 Sequence 360,	2.2 148 15 US-10-195-901-300 Sequence 360, 30, 31, 40 15 US-10-195-902-360	2.2 148 15 US-10-196-743-360 Sequence 360,	2.2 148 15 US-10-173-708-360 Sequence 360, 2.2 148 15 US-10-176-479-360 Sequence 360, 2.2 148 15 US-10-176-748-360 Sequence 360,
2.2 148 15 US-10-180-555-360 Sequence 360, 2.2 148 15 US-10-180-559-360 Sequence 360, 2.2 148 15 US-10-181-000-360 Sequence 360, 2.2 148 15 US-10-183-010-360 Sequence 360, 2.2 148 15 US-10-183-012-360 Sequence 360, 2.2 148 15 US-10-184-614-360 Sequence 360, 2.2 148 15 US-10-184-635-360 Sequence 360, 2.2 148 15 US-10-184-635-	45 6 2.2 148 15 US-10-184-647-360 Sequence 360, 46 6 2.2 148 15 US-10-184-652-360 Sequence 360, 47 6 2.2 148 15 US-10-184-652-360 Sequence 360, 48 6 2.2 148 15 US-10-187-594-360 Sequence 360, 48 6 2.2 148 15 US-10-187-596-360 Sequence 360, 49 6 2.2 148 15 US-10-187-796-360	50 6 2.2 148 15 US-10-187-885-360 Sequence 360, 51 6 2.2 148 15 US-10-187-886-360 Sequence 360, 52 148 15 US-10-199-464-360 Sequence 360, 53 6 2.2 148 15 US-10-199-463-360 Sequence 360, 53 6 2.2 148 15 US-10-196-756-360	54 6 2.2 148 15 US-10-176-751-360 Sequence 360, 55 6 2.2 148 15 US-10-176-950-360 Sequence 360, 56 6 2.2 148 15 US-10-176-990-360 Sequence 360, 57 6 2.2 148 15 US-10-180-541-360 Sequence 360, 57	58 6 2.2 148 15 US-10-180-542-360 Sequence 360, 59 6 2.2 148 15 US-10-180-548-360 Sequence 360, 50 6 2.2 148 15 US-10-180-551-360 Sequence 360,	51 6 2.2 148 15 US-10-180-998-360 Sequence 360, 52 6 2.2 148 15 US-10-180-999-360 Sequence 360, 53 6 2.2 148 15 US-10-183-013-360 Sequence 360,	54 6 2.2 148 15 US-10-184-612-360 Sequence 360, 55 6 2.2 148 15 US-10-184-616-360 Sequence 360, 56 6 2.2 148 15 US-10-184-617-360 Sequence 360,	57 6 2.2 148 15 US-10-184-622-360 Sequence 360, 58 6 2.2 148 15 US-10-184-628-360 Sequence 360, 59 6 2.2 148 15 US-10-184-628-360 Sequence 360, 59 6 2.2 148 15 US-10-184-628-360	70 6 2.2 148 15 US-10-184-630-360 Sequence 360.	73 6 2.2 148 15 US-1U-184-052-360 Sequence 360, 73 6 2.2 148 15 US-10-184-660-360 Sequence 360, 74 6 2.2 148 15 US-10-184-640-360 Sequence 360,	75 6 2.2 148 15 US-10-184-650-360 Sequence 360, 76 6 2.2 148 15 US-10-184-651-360 Sequence 360, 77 6 2.2 148 15 US-10-187-588-360 Sequence 360,	8 6 2.2 148 15 US-10-187-597-360 Sequence 360, 79 6 2.2 148 15 US-10-187-598-360 Sequence 360, 80 6 2.2 148 15 US-10-187-600-360 Sequence 360, 187-600-360 Sequence 360, 187-6	31 6 2.2 148 15 US-10-187-601-360 Sequence 360, 2.2 148 15 US-10-187-602-360 Sequence 360, 360, 360, 360, 360, 360, 360, 360,	55 b 2.2 148 15 US-1U-187-b03-360 Sequence 360, 34 6 2.2 148 15 US-10-187-741-360 Sequence 360, 35 6 2.2 148 15 US-10-187-743-360 Sequence 360, 350, 350, 350, 350, 350, 350, 350, 35	36 6 2.2 148 15 US-10-187-746-360 Sequence 360, 37 6 2.2 148 15 US-10-187-747-360 Sequence 360, 360, 360, 360, 360, 360, 360, 360,	88 6 2.2 148 15 US-10-187-751-360 Sequence 360, 369 6 2.2 148 15 US-10-187-753-360 Sequence 360,	90 6 2.2 148 15 US-10-187-754-360 Sequence 360, 91 6 2.2 148 15 US-10-187-757-360 Sequence 360,	52.2 148 15 US-10-187-884-360 Sequence 360, 33 6 2.2 148 15 US-10-188-767-360 Sequence 360, 360, 360, 360, 360, 360, 360, 360,	94 6 2.2 148 15 US-10-188-769-360 Sequence 360, 35 6 2.2 148 15 US-10-188-770-360 Sequence 360,	36 6 2.2 148 15 US-10-188-773-360 Seguence 360, 37 6 2.2 148 15 US-10-188-781-360 Seguence 360,	98 6 2.2 148 15 US-10-194-361-360 Seguence 360, 99 6 2.2 148 15 US-10-194-423-360 Seguence 360.	00 6 2.2 148 15 US-10-195-897-360 Sequence 360,	12 6 2.2 148 15 US-10-155-902-360 Sequence 360, 13 6 2 3 148 15 US-10-156 360 Sequence 360, 13 6 2 3 3 3 6	5.2 148 15 US-10-196-743-360 Sequence 360,	15 6 2.2 148 15 US-10-173-708-360 Sequence 360, 26 2.2 148 15 US-10-176-479-360 Sequence 360, 27 6 2.2 148 15 US-10-176-748-360 Sequence 360, 27

^
*
<u>Q</u>
rap
н
·
g
ن
ᅼ
O
٠
N
- 1
ø
œ
\mathbf{H}
Ö
- 1
ო
_
Ō
ī
Ó
9
ī
m
ă D
_

equence 360, App Sequence 360, App Sequence 360, App	360, 360,	360,	360, 360,	360,	360,	360,	360,	360,	360,	1000	360,	360,	360,	, מיני	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	200	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	360,	quence 360,
148 15 US-10-194-362-360 Se 148 15 US-10-194-364-360 Se 148 15 US-10-194-395-360 Se	1 15 US-10-194-424-360 8 1 15 US-10-194-458-360	1 15 US-10-194-459-360	1 15 US-10-194-488-360 5 3 15 US-10-195-886-360	15 US-10-195-891-360	3 15 US-10-196-746-360 8	15 US-10-196-753-360	3 15 US-10-196-761-360	3 15 US-10-197-692-360	3 15 US-10-197-693-360	3 15 11S-101-101-000-360	3 15 US-10-197-703-360	3 15 US-10-197-711-360	3 15 US-10-198-757-360	3 TS US-T0-198-360	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	3 15 US-10-198-767-360	3 15 US-10-199-301-360	15 US-10-199-307-360	3 15 US-10-199-312-360	15 US-10-199-315-360	3 15 US-10-199-457-360	3 15 US-10-199-459-360	3 15 US-10-199-460-360	3 15 US-10-199-461-360	3 15 US-10-199-667-360	3 15 US-10-199-673-360	3 IS US-10-201-321-360	3 15 US-10-201-326-360	3 15 US-10-201-532-360	3 15 US-10-201-533-360	3 15 US-10-201-535-360	3 15 US-10-201-769-360	3 15 11S-10-201-854-360	3 15 US-10-202-410-360	3 15 US-10-202-473-360	3 15 US-10-202-474-360	3 15 US-10-205-512-360	3 15 US-10-205-892-360	3 15 US-10-205-894-360	3 15 US-10-205-896-360	3 15 US-10-205-898-360	3 15 US-10-205-903-360	3 15 US-10-206-909-360	3 15 US-10-206-910-360	3 IS US-IU-206-911-360	3 15 11S+10-206-913-360	3 15 US-10-206-914-360.	3 15 US-10-206-920-360	3 15 US-10-206-921-360	3 15 US-10-206-923-360	3 15 US-10-206-925-360	3 15 US-10-206-926-360 3 15 US-10-206-927-360	3 IS US-IU-208-92/-360	3 15 US-10-207-917-360	3 15 US-10-207-918-360	3 15 US-10-207-919-360	3 15 US-10-207-920-360 S
, n n																																•				•			•	•			•	•	•	•			•	•	•	•	•		•	•	•
ουο	9 9	9	φœ	9	6 4	. 40	9	9	φų	שים	υ	9	۰ و	ب م	o v	w	9	9	ωV	ט ע	οω	· vo	φ	9	9	v v	oч	o vo	ο ω	ø	9	φΨ	ס ע	φ	9	ب و	0 ن	· v	9	ω,	ρV	9	9	6	۷ م	ى م	o ve	,	9	9 '	φ (oν	ט ע	·φ	9	φı	9
455 455 455	457 458	459	460 461	462	463	465	466	467	468	W C 4	471	472	473	47.4	7 4	47.5	478	479	480	487 487	4 4 1 00 1 00	48 4	485	486	487	488	200 A	0.04	492	493	494	495	4 4	498	499	500	502	503	504	502	505	508	808	510	511	512	115	515	516	517	8 7 7	ν I ν ν Ι ν	0 2 C C	522	523	524	525
App App	App	App	App	App	App	App	App	App	App	App	App	App	App	App	dat.	App	App	App	App	App	App	App	App	App	App	App	App	App	App	App	App	App	App	App	App	App	App	App	App	App	App	App	App	App	App	App	App	ADD	App	App	App	App	App	App	App	App	App
	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	equence 3	eduence 3	equence 3	ednence 3	equence 3	edneuce 3	eduence 3	equence 3	edneuce 3	equence 3	ednence 3	equence 3	equence 3	ednence 3	edneuce 3	equence 3	equence 3
US-10-201-534-360 US-10-201-770-360 US-10-201-855-360	-201-856-3 -202-469-3	-202-470-3	-202-476-3 -202-434-3	-202-935-3	-202-936-3	1-202-939-3	-205-509-3	-205-895-3	-205-899-3	-202-900-3 -205-900-3	-195-890-3	-006-818A-	-183-002-3	184-621-3	1 27 - 752 - 3	-187-887-3	1-194-461-3	-195-892-3	1-196-751-3)-19/-694-3)-197-697-3	-197-707-3	199-303-3	1-199-318-3	1-199-458-3	1-199-462-3	0-201-324-3	0-201-328-3	-201-521-3 -201-528-3	-201-529-3	0-201-530-3	-202-408-3	0-202-409-3	1-202-411-3 1-202-411-3	-205-502-3	0-205-507-3	0-205-511-3	-205-902-3	1-194-456-3	1-196-758-3	0-198-770-3	7-139-308-3	0-205-893-3	3-205-897-3	0-196-754-3	0-174-571-3	J-176-746-3	-1183-011-0)-184-633-3	0-184-639-3	0-187-742-3	0-187-748-3	0-188-766-3	7-188-771-3 1-192-006-3	7-192-008-3	0-192-009-3	0-192-012-	0-192-014-3
1 5 5	10.10					0 10				۰.	٠	10	10.1		A 15		ın	'n	.n	Λu) IC	ı.	ın ı	ıΩ	ın	ın	ın u	n u	ח נח	ın	'n	ın ı	n u	n in	so.	ro r	n m	ம	īυ	ın ı	n u	ı ın	ß	s i	ın ı	ΩĽ	ח נר	າທ	ı ısı	S I	ហេ	សម	n u	n m	s us	ı,	Ŋ
148 148								***				***		e # •	# 4	4 44	44	44	₹# 1	d c	4 4	• 4	•	4	<**	₹*	TH T	# 41	* <*	-	44	4# 4	ਤਾਂ ਚ	* 4*	4	44 4	* 4	' ਵਾ	4	♥ '	# 4	• 4	4	~ .	ਰਾ •	₫ 5	* 4	* 4	4	4	♥ '	ਰਾ ਹ	ਹਾ ਹ	3° 50°	. 4	~ ~	4
2.5																		•		•					•	•					•	•	•		•	•			•	•	•		•	•	•	•	•			•	•	•	•		• •	•	
. • •	99	9	ωv	9 0	φı	ם עם	9	9	œ ر	ρV	o 40	9	9	ω.	οu	, L	9	9	9	ים	o vo	o w	9	9	9	9	6 (o vo	9 69	9	9	ωı	ט פ	œ	9	<u>ن</u> ی	ی د	9	9	9 '	שפ	φ	9	9	ω (ρų	ט ע	o co	· w	9	y v	9 4	ט ס	و ه	9	9	v
382	84 5.5	98	87	0 00	060	1 C	93	94	95	9 10	96	66	00	100	200	0.0	0.5	90	07	9 6	0.0	1 1	12	13	14	15	16		16	20	21 ,	22	2 4	25	26	27	2 C	30	31	32	24	20.00	36	37	8 6	אכ	, t	1 7 7	43	44	45	46	447	0 4 4	450	51	52

Д
ጔ
ଜ
ü
•
^
ĸ
9,
٠٠.
ᅼ
0
•
~
ı
ø
18a
-1
o.
1
m
-
in
ĭ
_
50
7
118
₽

Sequence 360, App Sequence 360, App Sequence 360, App Sequence 242, App Sequence 242, App Sequence 242, App	e 242	equence 336	equence 360 equence 336	equence 336	ednence 360	equence 360 equence 242	equence 336	960	equence 242, equence 336	equence 336	Sequence 336, App Sequence 336, App	quence 807,	equence 199, equence 520	Sequence 9, 1	4302	Sequence 1	9 9	Sequence 137, App Sequence 135, App	9 9	n c	9 9	Sequence 14995	quence 25	Sequence 440, App	equence 440,	equence 855	equence 621	quence 3644		equence 132	123	Sequence 8437,	1293, e 12027	e 134,	e 146,	e 610	Sequence 1884, equence 10094.	10126,	equence 13891,	equence 1 equence 5	Sequence 29, A	quence y, App equence 82. A	
15 US-10-205-905-360 15 US-10-206-918-360 15 US-10-208-025-360 15 US-10-223-084-242 15 US-10-223-096-242 15 US-10-223-090-242	Sh	S S	sn ns	Sn	15 US-10-187-739-360	15 US-10-206-907-360 15 US-10-223-083-242	15 US-10-015-391A-336	SS	15 US-10-223-089-242 15 US-10-017-407A-336	16 US-10-006-041A-336	16 US-10-011-833A-336 16 US-10-015-822A-336	9 US-09-764-853-807	15 US-10-091-438-199 10 US-09-738-626-5207	12 US-09-935-703-9	9 US-09-864-761-43023 9 HS-09-864-761-48638	15 US-10-153-668-154	15 US-10-156-761-10041	11 US-09-948-/83-13/ 11 US-09-892-877-135	11 US-09-892-877-291	12 US-10-190-414-1	15 US-10-156-761-11381	15 US-10-156-761-14995	9 US-09-767-041-25 11 HS-09-934-455-124	11 US-09-809-391-440	12 US-09-882-171-440 15 US-10-156-761-8834	15 US-10-106-698-8558	15 US-10-106-698-6213	9 US-09-864-761-36448	9 US-09-925-297-716 10 US-09-738-626-4189	11 US-09-764-881-132	15 US-10-156-761-8137	15 US-10-156-761-8437	9 US-09-925-301-1293 15 US-10-156-761-12027	11 US-09-934-455-134	15 US-10-295-403-146 16 US-10-278-536-204	15 US-10-102-806-610	11 US-09-880-748-1864 9 US-09-815-242-10094	9 US-09-815-242-10126	9 US-09-815-242-13891	11 US-09-849-092-13 12 US-09-769-744A-50	15 US-10-233-131-29	9 US-09-796-089-9 12 US-10-237-496-82	110-1
148 148 148 148	148	148 148	148 148	148	000	00 00	co o																																	244 244			1 C
~~~~~~ ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	222		2 2	2.2	5.5	2.2	2.5	777	2 2	2.5	0 0 0 0	2.2	2 2	•	٠		•	2 6			٠		0, c 0, c																	2 2.			
ของอออ	w w w	o vo vo	99	ωu	9 0	9 9	y y	יטס	o	9	oφ	9	ى س	9	y y	οv	9	oφ	94	o vo	9 4	φ	ש ע	9 9	φu	φ	<b>9</b> 4	9	oφ	o ر	o vo	φ.	യ യ	ب ی	മശ	, 10 1	ρ¢	νφ	φ.	oφ	91	ی م	<b>,</b> u
6 6 6 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	606	600	611	613	615	616	618	620	621	623	624	626	628	629	630	632	633	635	636	638	639	641	642	644	645	647	648	650	651 652	653	655	929	658	629	661	662	664 664	999	999	668	699	670	
APP APP APP APP APP APP	App App	App	App App	App	App	Арр Арр	App	App	App App	App	App App	App	App App	App	App	App	App	455 455	App	App	App	App	App	App	App	App	App App	App	App App	App	App	App	App App	App	App App	App	App	App	App	App App	App	App App	44
00000000000000000000000000000000000000									٠.		٠.						360,	, ,	336,	360,	٠,	9	360,			360,					9	ý.		0,0					00		0.0	360,	
Sequence Sequence Sequence Sequence Sequence Sequence	Sequence	Sequence	Sequence	Sequence	Seguence		Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Seguence	Sequence	Sequence	Sequence	Sequence	Sequence	1 ( ) ( )
-10-208-021-360 -10-208-022-360 -10-208-023-360 -10-208-026-360 -10-208-029-360	-10-015-393A-336 -10-232-232-360 -10-195-898-360	-10-196-759-360 -10-015-869A-336	-10-173-693-360 -10-174-578-360	-10-175-741-360 -10-175-750-360	-10-176-986-360	-10-184-641-360 -10-187-888-360	-10-194-360-360	-10-195-895-360	-10-199-302-350 -10-201-323-360	-10-205-510-360	-10-205-891-360 -10-206-917-360	-10-207-923-360	-10-207-924-360 -10-208-028-360	-10-012-121A-336	-10-205-904-360 -10-175-753-360	-10-180-553-360	-10-201-327-360	-10-121-082-380 -10-006-116A-336	-10-006-117A-336	-10-183-003-360	-10-183-016-360	-10-013-913A-336	-10-125-923A-360 -10-176-491-360	-10-176-979-360	-10-187-592-360 -10-007-194A-336	-10-197-691-360	-10-198-771-360 -10-013-430A-336	-10-174-575A-360	-10-1/9-520-360	-10-202-941-360	-10-011-671A-336	-10-012-755A-336	-10-179-526-360	-10-223-085-242	-10-1/3-/01-300	-10-179-518-360	-10-183-018-360 -10-184-624-360	-10-184-657-360	-10-197-701-360	-10-201-857-360	-10-202-413-360	-10-202-938-360	10 10 10 10 10 10 10 10 10 10 10 10 10 1
S US-10 S US-10 S US-10 S US-10 S US-10	ហហហ	ഗഗ	S S	ഗഗ	மை	n n	ហហ	າທະ	ດທ	ın ı	n m	ហេដ	ດທ	ហ	n n	n O	LO U	n m	n n	n n	n n		v ru	د د	טוט	ı LO	a ru	ហម	n n	n n	ı LO	C) II	n w	ហម	n n	ın ı	u n	ואו	n n	n n	LO LI	n w	) L
111488 448 4488 4488 411111		וחח				4 7	~ -			Π,		Α,		-	-	1	~ ~				<b>⊣</b> -							н,			-			Н.		-	⊣						٠.
, i i i i i i i i	444	10.01	4.4	2.2		, c.	u, c	. r. c	, v.	4	, ~	4	, v.	~;	7 0		vi.c	. r.	u, c	. c.	4.0	. 7.	7 0	10.0	7 0	. 7.	7 7	7	, r.	٠. د	. 72	ú, c	. r.	4.0	, ci	9.5	, r.	. ~ .	٠i د	, r.	9,0	, r.	1 1
000000 00000																																											

^
rapp
#
ŭ
Ξ.
'n
9
.Ľ
olic
·.:
٦
ญ่
~
à
ä
18a.
918
-918
9
9
9
-673-918
-673-91
-673-91
673-91
-09-673-91
-09-673-91

Appl Appl	Appl Appl	Appl	Appi Appl	App1	App1	App1	Appl	App1	Appl	Appl	App]	App1	Appl	Appl	App1	Appl	Appl	Appl	Appl	Appl	Appl	Appr	App	App	ğe,	A !	APP A	A.	8, A	Appl	App nn]i	ppl	Appl	App1	Appı ppli	Appl	App.	ppli	ppii	ppli	pp.11	ppli	ppli	Appli Appli	, Ap	Appl	, Ap	Appl	App
882	82, 82,	85,	82,	82,	2 2	82,	82,	2 6	82,	82,	82, a2,	82,	82,	82,	82,	82,	82	2 2 2	82,	82,	82	iπ	'n	43	27	3878	υw	-	(N	- 4	(1	• •	m w	സ	٠.	Ç	۰ د	•			-	• •			. 6	4,5	592,	14,	41 / 2
	ence	ance	ance	ance	ance	ance	ence	ance on ce	ance	ence	ence	ance	ence	ance	nce	ance	ance	ance on ce	nce	ance	ance	ice 1	ce 1	ance of	ice 1	ice 1	ance ace 3	ce 1	ance or ce	ence	ance	ce 6	ence	ance	ance	ence	nce	ance	nce	ance	ance on the	nce	ence	ence	suce	ence	10e 5		ance ace
Sequenc	Sequenc	Seque	segue	Segue	Seque	Seque	Seque	Seque	Seque	Seque	Seguence	Seque	Seque	Seque	sedne	Seque	Seque	Seque	Seque	seque	Seque	equer	equer	Seque	equer	edner	segue	eguer	Seque	Seque	Seque	equer	Sequence 6	Seque	seque	Seque	Seque	Seque	Seque	Seque	Seque	Segue	Seque	Seque	Seque	Sequenc	equer	Sequence	sedue
0) 0)	0) 0)	0, (	,, 0,		JJ 0,	, 0,	0, 0	J) U.	, 0,	0,1	0, 0	, 0,	0,1	u) (	,, 0,	נטי	0) (	J) U.	, 0,	0)	0) 0	ຶ່ວ	S	0, 0	S	Š	" ຍັ	S	<b>U</b> ) <b>U</b>	, 0,	03 0.	Š	0) 0,	0) (	,, 0,	0) 0	נט נו	0) (	נט מ	. 03	J) ()	, 0)	0, 0	,, 0,	1 03	0) 0.	, ñ	0, 0	מ מ
S US-10-242-652-82 S US-10-242-990-82	2 2	32	2 2	32	. 22	32	32	2 6	22	32	22	2 2	35	2 2	2 2	32	22	Z 12	22.5	32	2 2	3 5	13	143	0279	3878	1608	1706	12528	4.	525		53	<u> </u>	_ ~	0.5	2 ~	01.0	N 01		01 0	. 01	01.6	21 01	3942	54 7746	592	1.4	2/05
652-8 990-8	023-8 103-8	276-8	364-8	494-	230-2	253-0	479-1	422-6	811-8	912-8	852-8	981-6	911-	913-8	121-8	305-8	929-6	3-95-0	255-6	910-8	910-8	54-14	15-1	960	42-10	42-1	455 51-31	42-1	761-3	536-,	075-	43-6	141-6 264-9	795-	034-	951-6	246-2	301-	245-2	223-	167-	435-	-066	396-	526-	736-5	12-55	500-	3 - 96 - 6
242-	243- 243-	243-	243-	243-	244-	245-	245-	245-	245-	245-	245-	245-	245-	245-	246-	246-	246-	1687	243-	245-	245-	39-2	04-6	055-	15-2	15-2	64-7	15-2	156-	971-	238-	26-6	042-	289-	9/6-	210-	033-	033-	033-	033-	033-	033-	032-	033-	738-	769-	15-2	910-	106-
-10-	-10-	-10-	-10-	-10-	-10-	-10-	-10-	-10-	-110-	-10-	-10-	-10-	-10-	-10-	-101-	-10-	-10-		-10-	-10-	-10-	09-7	6-60	-10-	8-60	09-8	-60-	8-60	-10-	-60-	-10-	09-7	-10-	-10-	- 60	-10-	-10-	-10-	- 0 -	-10-	-10-	-10-	-10-	-10-	-60-	-09-	8-60	-60-	-10-
5 US	S C C	Sn	200	G G	90 0	S	Sn	2 5	38	SD	SU	38	n a	SD	SO	Sin	Sin	2 5	as a	Si	Sign	e si	-Sn	2 25	ns-	Sn	SO T	-SD	SUS	n c	2 03	rs.	SO I	SD 3	200	Sn	SO	SD	255	Sn	SD	SS	Sn	255	ns o	2 US	S C	us I	SOL
5 11	<b>ત</b> ત	Н,		Н.	4 4	-	Н,		-	~i		4 ~	· e4 •	٦,	٦,	ı –		-1 -	4 ~	Н.		9	6	9 4	ה ה ה	თ i	2 L	7	۲ a		ת ר	10	70		<b>⊣</b> ⊢	-	4 11	٦,		i ~ 1	н.	4	Η,			2 0	10	91	- a
2 2	44	4.	4 4	4	44	4	4.	4 4	4	4	4 4	4 4	4.	4.	4 4	4	4.	4 4	4	4	4 4	1 4	4	4 4	r LO	ro r	വവ	2	n n	9	9 4	9	26.	7	- 1	27.0	, _	7	- 1	7	7	. ~	7	7	7	28	oœ	80 0	<b>∞</b> ο
22		•		•			•	•		•	•			•			•			•			•	•		•			٠							•												•	
., .,	.,.,	.,,							4 (4	.,		4 (4			V (V		.,			(1)	CV C	V 1 V			4 (4	.,,	. 11 (14					114				.,,	4 (4	.,.	4 (4			4 (4		1 (1	1 (4		v (v	(1)	N
oυ	99	9 1	οφ	9	o v	9	91	שים	· ·	9	υv	o o	9	9 (	o vo	φ	φι	שע	9	9	φu	oω	9	y w	· ω	9	യ യ	•	vo v	o vo	w w	ω	<b>w</b> w	6	ω 0	60	oφo	φı	o o	φ	o u	φ	·φ	oφ	φ	9 9	9	φı	9 4
۲ a	<b></b>					. ~		<b>.</b> .													9 1		o.	_	- 2						_		w 4			00 0				4.						0, 10		ın v	
74.	40	S	വവ	S	വവ	75	758	7.5	761	16.	76.	76	76	76,	7697	77(	77	1	776	77	776	778	77	78(	782	787	787	786	787	785	79(	7.67	797	79	7 7	798	$\circ$	0	0 0	0	00	0	0	ᇬ	1	813		Н.	
								_			_			_			_																																
r L	<b>5</b>		5.5	[d	<u> </u>	51	ď	7.5	1.0	51.	۲ <u>.</u>	1.0	.J.		1.0	10	Įď.	7.0	10	5]	[6]	1.0		[0.0	7.6.	رم. ا		. T.	d. c	510	۲. ت	1.0.	را د	LG.	7.0	.5.	7.0	7.5	1.0	1.2.	7.5	1.0	.d.	<u> </u>	57	٦. ₅	10	.5.	T. 7
, Appl							_	_			_			_			_			_	_			_		_			_		_							_											_
e 82																																																	
Sequence	nenc	nenc	renc	nenc	Drenc	nenc	nenc	Drenc	nenc	nenc	nenc	Cenc	nenc	nenc	nenc	nenc	nenc	Tuend	nenc	pend	nenc	Cenc	nenc	Denc	Denc	nenc	Denc	nenc	nenc	nenc	Denc	Denc	Sequence	nenc	nenc	nenc	nenc	nenc	nenc	nenc	Denc	nend	nenc	nenc	nenc	Sequence	nenc	nenc	nenc
Sec	Sec	Sec	S S	Sec	S S	Sec	Sec	0. C	Sec	Sec	Sec	Second	Sec	Sec	0.00	Sec	Sec	S C	Sec	Sec	Sec	2 0	Sec	S G	Sec	Sec	Sec	Sec	Sec	Sec	Sec	S S	Sec	Sec	Sec	Sec	S e	Sec	S o	Sec	S C	Sec	Sec	S & S	Sec	Sec	Sec	Sec	Sec
2-574-82 3-261-82	2-82	1-82	2-87	2-85	3-82	3-82	7-82	3-82	1-82	3-82	5-82	3-82	0-82	5-82	0-82	9-82	0-82	6-82	9-82	1-82	0-82	2-87	5-82	7-82	0-82	7-82	0-82	3-82	5-82	5-82	6-82	4-82	5-82	4-82	3-62	8-82	8-82	0-82	7-82	7-82	5-82	9-82	7-82	8-62	9-82	0-82	4-82	1-82	1-87
0-24	0-24	0-24	0-24	0-19	0-23	0-24	0-24	0-24	0-24	0-24	0-23	0-23	0-23	0-24	0-24	0-24	0-24	0-23	0-24	0-24	0-24	0-24	0-24	0-24	0-24	0-24	0-24	0-24	0-24	0-23	0-23	0-24	0-24	0-24	0-24	0-24	0-24	0-24	0-24	0-24	2-24	0-24	0-24	0-24	0-24	2-24	0-24	0-23	-23
US-1	US-1 US-1	US-1	US-1	US-1	US-1	us-1	US-1	US-1	us-1	US-1	US-1	US-1	us-1	US-1	US-1	US-1	us-1	18-1	US-1	US-1	US-1	US-1	US-1	US-1	US-1	US-1	US-1	US-1	US-1	US-1	US-1	US-1	US+1 US-1	US-1	US-T	US-1	US-1	US-1	US-I	US-1	US-1	US-1	US-1	US-1	US-1	US-1	US-1	US-1	1-50
12	~ ~	2 0	N (7	~	N O	ı ın	ເດເ	n n	ı ın	ហ	n n	າທ	ı CO I	ı,	nп	N.	S	ທແ	ח ו	LO I	in u	ດທ	ın ı	ın u	n un	ın ı	n n	ı,	n n	n un	יט ט	n Lo	o c	ı,	n n	S I	n w	ın ı	വ	ı GO I	n n	n un	ın ı	տ տ	n n	יט יט	n n	முட	ם מ
245 245	245 245	245	245	245	245	245	245	245 245	245	245	245	245	245	245	2.4.5 2.4.5	245	245	2 4 4 2 4 7	245	245	245	245	245	245	245	245	245 245	245	245	245	245	245	245	245	245 245	245	245	245	245	245	245	245	245	245 245	245	245	245	245	245
44		•		•			•			•	•			•						•	•		•	•	٠.	•		•	•			٠.		•							•		•			•			
<b>9 9</b>	y y	y v	و و	9	oυ	φ	y v	ی م	υ	9	ωv	οw	9	<u>ن</u> م	o vo	φ	ω ι	ی م	ο φ	9	y y	o	9	ωu	9	y y	စ ဖ	· o	o u	οω	w w	o o	ωw	<b>6</b>	oω	94	o vo	o ر	0 0	9	ωv	9	y v	o o	9	<b>9</b> 4	οvo	y v	φų
674 675	76	78	2 2	31	2 8	34	92	37	8 8	99	90	32	93	4 L	. o	26	86	200	35	02	e 5	22.5	90	0.0 0.0	96	01	17	13	- 14 م	19	17	161	20	22	2 4 5	25	27	88	v 0	31	2 6	7 4	32	36	38	93.9	2 = =	2.5	£ 4
9	9 9	6	9	9	9 9	9	3	ي ق	9	9	ý v	. 6	9	ا ف	0 0	9	6	9 6	7	7	~ ~	, 7	7	7 7	7	7	7.	7.	7 '	7	5	7	,,,	,,,		7,5	. ;;	7,5		7	7 7	73	2,5	73	7	7.	74	7,	76

Ω
Q
$\mathtt{rapp}$
ũ
٠.
$\sim$
oligo
٧,
Τ.
ユ
O
•
2
ŧ
918a
œ
-
on.
ï
673
ĭ
60
0
1
gn
3
-

303, 1032, 1032, 1032, 1032, 1032, 1032, 1032, 1032,		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	100 100 100 100 100 100 100 100 100 100	Sequence 303, App Sequence 303, App Sequence 182, App Sequence 303, App Sequence 182, App Sequence 182
336 12 US-10-14; 336 12 US-10-18; 336 12 US-10-19; 336 12 US-10-19; 336 12 US-10-19; 336 12 US-10-19; 336 12 US-10-19; 336 12 US-10-17; 336 12 US-10-17; 336 12 US-10-17; 336 12 US-10-17; 336 12 US-10-17;	336 12 US-10-17, 336 12 US-10-17,	336 12 US-10-173	336 12 US-10-179-515-182 336 12 US-10-179-515-182 336 12 US-10-173-702-182 336 12 US-10-173-703-182 336 12 US-10-173-704-182 336 12 US-10-176-486-182 336 12 US-10-176-490-182 336 12 US-10-176-491-182 336 12 US-10-176-981-182	2 336 12 US-10-143-028A-303 2 336 12 US-10-143-028A-303 2 336 12 US-10-145-089A-303 2 336 12 US-10-245-182 2 336 12 US-10-26-475-182 2 336 12 US-10-145-017A-303 2 336 12 US-10-145-017A-303 2 336 12 US-10-145-124A-303 2 336 12 US-10-160-502A-303 2 336 12 US-10-160-502A-303 2 336 12 US-09-978-681A-303 2 336 12 US-10-10-184-303 2 336 12 US-10-164-087A-303 2 336 12 US-10-144-087A-303 2 336 12 US-10-144-087A-303 2 336 12 US-10-144-087A-303 2 336 12 US-10-144-087A-303 2 336 12 US-10-144-082A-303 2 336 12 US-10-174-086A-303 2 336 12 US-10-144-082A-303 2 336 12 US-10-164-929A-303 2 336 12 US-10-164-929A-303 2 336 12 US-10-164-929A-303 2 336 12 US-10-164-929A-303
00000000000000000000000000000000000000	24 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	11111115222222222222222222222222222222	2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	99999999999999999999999999999999999999
	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2			ce 303, App ce 303, App
321-856-341 Sequence 321-856-344 Sequence 238-075-498 Sequence 940-037A-2 Sequence 128-714-3283 Sequence 128-714-3283 Sequence 823-829-18 Sequence 826-6533 Sequence 826-6	3 3 3 3 3 3 4 4 3 3 3 3 3 3	conness  con	3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	09-978-608A-303 09-978-608A-303 09-978-403A-303 09-978-403A-303 09-978-403A-303 09-978-564A-303 09-978-564A-303 09-978-564A-303 09-978-403A-303 09-978-603A-303 09-978-603A-30
			US-10-0 US-10-0 US-10-0 US-10-0 US-10-0 US-10-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-09-0 US-0 US-0 US-0 US-0 US-0 US-0 US-0 US	8

```
Query Match
2.9%; Score 8; DB 15; Length 251;
Best Local Similarity 100.0%; Pred. No. 16;
Matches 8; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB 15; Length 253;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
63 SNSTYIHCDVTNEDGVKNAVDNTVSTYGKLDIMF 96
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match 2.9%; Score 8; DB 15
Best Local Similarity 100.0%; Pred. No. 16;
Macches 8; Conservative 0; Mismatches
                                                                  RESULT 2
US-10-156-761-14812
Sequence 14812, Application US/10156761
Sequence 14812, Application US/10156761
Sublication No. US20030119018A1
GENERAL INCOMMATION:
APPLICANT: OKURA, SATOSH
APPLICANT: IKEDA, HARUO
APPLICANT: ISHIKAWA, JUN
APPLICANT: HAITAWA, JUN
APPLICANT: ASHIRA, TADAVOSHI
APPLICANT: APINOSHI
APPLICANT: HATTORI, MASAHIRA
TITLE OF INNENTION: NOVEL POLYNUCLEOTIDES
FILE REPERBUCE: 249-262
CURRENT APPLICATION NUMBER: US/10/156,761
CURRENT FILING DATE: 2001-05-30
PRIOR PLING DATE: 2001-05-30
PRIOR PLING DATE: 2001-05-30
PRIOR PLING DATE: 2001-05-30
PRIOR FILING DATE: 2001-06-02
NUMBER OF SEQ ID NOS: 15109
SEQ ID NO 14812
LENGTH: 251
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 3
US-10-156-761-14537
Sequence 14537, Application US/10156761
SUBLICATION NO. US20030119018A1
GENERAL INFORMATION:
APPLICANT: OMURA, SATOSHI
APPLICANT: ISHIKAMA, JUN
APPLICANT: ISHIKAMA, JUN
APPLICANT: HARTAMA, JUN
APPLICANT: HARTAMA, JUN
APPLICANT: HARTORI, MASAHIRA
TITLE OF INVENTION: NOVEL POLYMUCEOTIDES
FILE REFERENCE: 249-262
CURRENT FILING DATE: 2002-05-29
CURRENT FILING DATE: 2001-05-30
FRIOR FILING DATE: 2001-05-30
FRIOR FILING DATE: 2001-05-30
FRIOR FILING DATE: 2001-05-30
FRIOR FILING DATE: 2001-06-02
NUMBER OF SEQ ID NOS: 15109
SEQ ID NO 14537
LIENGTH: 253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ) ORGANISM: Streptomyces avermitilis US-10-156-761-14537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ; TYPE: PRT
; ORGANISM: Streptomyces avermitilis
US-10-156-761-14812
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             19 TGGASGIG 26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GKVALITG 16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     12 TGGASGIG 19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     13 GKVALITG 20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 18
Sequence 18
Sequence 18
Sequence 16
Sequence 16
Sequence 16
Sequence 16
Sequence 18
Sequence 18
                           Sequence Seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TYPE: PRT
ORGANISM: Artificial Sequence
FEATURE:
COTHER INFORMATION: secoisolariciresinol dehydrogenase amino acid
OTHER INFORMATION: sequence from plasmid pAPI249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ouery Match 12.5%; Score 34; DB 10; Length 276; Best Local Similarity 100.0%; Pred. No. 7.4e-25; Matches 34; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 1
US-09-944-160-24
Sequence 24, Application US/09944160
SEPTIMENT: Leavin, Laurence
APPLICANT: Devin, Laurence
TITLE OF INVENTION: Monocot Seeds with Increased Lignan
TITLE OF INVENTION: Content
FILE REFERENCE: WSUN117983
CURRENT FILING DATE: 2001-08-30
SPRIOR APPLICATION NUMBER: US 60/230,632
NUMBER OF SEQ ID NOS: 49
SEQ ID NO 24
LENGTH: 276
LENGTH: 276
LENGTH: 276
LENGTH: 276
US-10-176-758-182

US-10-177-76-182

US-10-177-73-182

US-10-175-738-182

US-10-176-482-182

US-10-176-482-182

US-10-176-482-182

US-10-176-482-182

US-10-176-75-182

US-10-176-75-182

US-10-174-572-182

US-10-174-572-182

US-10-174-582-182

US-10-174-582-182

US-10-174-582-182

US-10-176-488-182

US-10-176-488-182

US-10-176-488-182

US-10-176-488-182

US-10-176-982-182

US-10-176-982-182

US-10-176-982-182

US-10-176-982-182

US-10-176-982-182

US-10-176-982-182

US-10-176-982-182

US-10-176-982-182

US-10-176-992-182

US-10-176-991-182

US-10-176-991-182

US-10-176-991-182

US-10-176-991-182

US-10-176-991-182

US-10-176-991-182

US-10-176-991-182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SNSTYIHCDVTNEDGVKNAVDNTVSTYGKLDIMF 93
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ALIGNMENTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   9
```

Gaps

ö

Gaps

```
Gaps
                         ..
                         0; Indels
                                                                                                                                                                                                                                                                                                                                          PAPLICATION STATEMENT OF THE TILE REPRENCE: PZO04P1 USD4P1 VOUR ET ILLE OF INVENTION: 87 Human Secreted Proteins TILE OF INVENTION: 87 Human Secreted Proteins CURRENT FILING DATE: 2001-10-29 PRIOR APPLICATION NUMBER: 09/154,707 PRIOR FILING DATE: 1998-09-17 PRIOR FILING DATE: 1998-03-19 PRIOR FILING DATE: 1998-03-19 PRIOR FILING DATE: 1997-03-21 PRIOR FILING DATE: 1997-03-21 PRIOR PLICATION NUMBER: US 60/041,277 PRIOR FILING DATE: 1997-03-21 PRIOR PLICATION NUMBER: US 60/042,344 PRIOR PLICATION NUMBER: US 60/042,344 PRIOR APPLICATION NUMBER: US 60/041,276
Pred. No. 17;
                            0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FILING DATE: 1997-05-30
APPLICATION NUMBER: US 60/048,069
FILING DATE: 1997-05-30
APPLICATION NUMBER: US 60/048,095
FILING DATE: 1997-05-30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRIOR FILING DATE: 1997-08-05
PRIOR APPLICATION NUMBER: US 60/056,370
PRIOR FILING DATE: 1997-08-19
PRIOR PRIOR APPLICATION NUMBER: US 60/060,862
PRIOR FILING DATE: 1997-10-02
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FILING DATE: 1997-03-21
APPLICATION NUMBER: US 60/041,281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER: US 60/048,094
FILING DATE: 1997-05-30
APPLICATION NUMBER: US 60/048,350
FILING DATE: 1997-05-30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICATION NUMBER: US 60/048,188 FILING DATE: 1997-05-30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FILING DATE: 1997-05-30
APPLICATION NUMBER: US 60/048,099
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICATION NUMBER: US 60/048,352
FILING DATE: 1997-05-30
APPLICATION NUMBER: US 60/048,186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICATION NUMBER: US 60/048,131
FILING DATE: 1997-05-30
APPLICATION NUMBER: US 60/048,096
FILING DATE: 1997-05-30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICATION NUMBER: US 60/048,355
FILING DATE: 1997-05-30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FILING DATE: 1997-05-30
APPLICATION NUMBER: US 60/048,351
FILING DATE: 1997-05-30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICATION NUMBER: US 60/048,135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FILING DATE: 1997-05-30
APPLICATION NUMBER: US 60/050,937
FILING DATE: 1997-05-30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICATION NUMBER: US 60/048,187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER: US 60/048,160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRIOR APPLICATION NUMBER: US 60/048,154
PRIOR FILING DATE: 1997-05-30
PRIOR APPLICATION NUMBER: US 60/054,804
                                                                                                                                                                                                                                                                 Sequence 128, Application US/09984245
Patent No. US20020165374A1
GENERAL INFORMATION:
Best Local Similarity 100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FILING DATE: 1997-05-30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FILING DATE: 1997-03-21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NUMBER OF SEQ ID NOS: 343
SOFTWARE: Patentin Ver. 2.0
                         8; Conservative
                                                                            19 TGGASGIG 26
                                                                                                                               15 recasere 22
                                                                                                                                                                                                                                          -09-984-245-128
                         Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRIOR
                                                                                                                               g
                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 473, Application US/10238075
Publication No. US20030148324A1
GENERAL INFORMATION:
APPLICANT: I.N.S.E.R.M.
TITLE OF INVENTION: Polynuclectides which are of nature B2/D+ A- and which are isolat TITLE OF INVENTION: E.coli, and biological uses of these polynuclectides and of their File Reference: BLANDINE CURRENT APPLICATION NUMBER: US/10/238,075
CURRENT APPLICATION NUMBER: 0003145
PRIOR FILING DAIE: 2000-03-10
PRIOR FILING DAIE: 2000-03-10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2.9%; Score 8; DB 12; Length 268;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 262;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0; Indels
                                                                                                                                                                                                     APPLICANT: Oblsen, Kari L.
APPLICANT: Zyskind, Judith W.
APPLICANT: Wall, Daniel
APPLICANT: Tawick, John D.
APPLICANT: Carr, Grant J.
APPLICANT: Yamamoto, Robert T.
APPLICANT: Ximamoto, Robert T.
TITLE OF INVENTION: Identification of Essential Genes in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2.9%; Score 8; DB 9;
100.0%; Pred. No. 17;
tive 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                             TILLE COFINENTION: PFORATYOCES
CURRENT APPLICATION NUMBER: US/09/815,242
CURRENT FILING DATE: 2001-03-21
PRIOR APPLICATION NUMBER: 60/191,078
PRIOR PILING DATE: 2000-03-21
PRIOR PILING DATE: 2000-05-23
PRIOR PILING DATE: 2000-05-26
PRIOR PILING DATE: 2000-05-26
PRIOR PILING DATE: 2000-05-26
PRIOR PILING DATE: 2000-05-26
PRIOR PILING DATE: 2000-10-23
PRIOR PILING DATE: 2000-11-27
PRIOR PILING DATE: 2000-11-27
PRIOR PILING DATE: 2000-11-27
PRIOR FILING DATE: 2001-12-26
PRIOR FILING DATE: 2001-02-16
                                                                                                  Sequence 10597, Application US/09815242
Patent No. US20020061569A1
GENERAL INFORMATION:
APPLICANT: Haselbeck, Robert
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ; TYPE: PRT
; ORGANISM: Enterococcus faecalis
US-09-815-242-10597
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NUMBER OF SEQ ID NOS: 1576
SOFTWARE: Patentin version 3.1
SEQ ID NO 473
LENGTH: 268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ORGANISM: Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Best Local Similarity 100.
Matches 8, Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              12 GKVALITG 19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            13 GKVALITG 20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-10-238-075-473
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-10-238-075-473
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠે
```

0; Gaps

```
Query Match 2.6%; Score 7; DB 11; Length 53; Best Local Similarity 100.0%; Pred. No. 37; Matches 7; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PAREMAL INCOMENTED 31

TITLE OF INVENTION: 87 Human Secreted Proteins FILE SPERMENCE: P200491
CURRENT FILING DATE: 1998-09-17
PRIOR PILING DATE: 1998-09-17
PRIOR FILING DATE: 1998-09-17
PRIOR FILING DATE: 1997-03-21
PRIOR FILING DATE: 1997-03-21
PRIOR PLICATION NUMBER: US 60/041,276
PRIOR PLICATION NUMBER: US 60/041,276
PRIOR PAPLICATION NUMBER: US 60/041,281
PRIOR PLILING DATE: 1997-03-21
PRIOR PAPLICATION NUMBER: US 60/048,350
PRIOR PAPLICATION NUMBER: US 60/048,135
PRIOR PAPLICATION NUMBER: US 60/048,135
PRIOR PLILING DATE: 1997-05-30
PRIOR PLILING DATE: 1997-05-30
PRIOR PAPLICATION NUMBER: US 60/048,187
PRIOR PLILING DATE: 1997-05-30
PRIOR PAPLICATION NUMBER: US 60/048,187
PRIOR PLILING DATE: 1997-05-30
PRIOR PAPLICATION NUMBER: US 60/048,187
PRIOR PLILING DATE: 1997-05-30
PRIOR PRIOR PLILING DATE: 1997-05-30
PRIOR PRILING DATE: 1997-05-30
PRIOR PLILING DATE: 1997-05-30
PRIOR PLILING DATE: 1997-05-30
PRIOR PLILING DATE: 1997-05-30
PRIOR PLILING DATE: 1997-05-30
PRIOR PRIOR PLILING DATE: 1997-05-30
PRIOR PL
                                       60/060,862
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 8
US-09-981-966-128
US-09-981-96-128
; Sequence 128, Application US/09983966
; Publication No. US20030060619A1
; GENERAL INFORMATION:
PRIOR FILING DATE: 1997-08-19
PRIOR APPLICATION NUMBER: US 60,
PRIOR FILING DATE: 1997-10-02
NUMBER OF SEQ ID NOS: 343
SOFTWARE: Patentin Ver. 2.0
SEQ ID NO 128
LENGTH: 53
                                                                                                                                                                                                                                                                              CRGANISM: Homo sapiens
US-09-966-262-128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     18 ITGGASG 24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                      ö
                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                      ;
0
                                                                                                                                                                          Query Match 2.6%; Score 7; DB 10; Length 53; Best Local Similarity 100.0%; Pred. No. 37; Matches 7; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRICE OF INVENTION: 87 Human Secreted Proteins
TITLE OF INVENTION: 87 Human Secreted Proteins
FILE OF ILING DATE: 2001-10-01
PRIOR PELING DATE: 1998-09-17
PRIOR PELING DATE: 1998-09-17
PRIOR PELING DATE: 1998-03-19
PRIOR FILING DATE: 1998-03-19
PRIOR FILING DATE: 1998-03-19
PRIOR FILING DATE: 1997-03-21
PRIOR FILING DATE: 1997-03-21
PRIOR FILING DATE: 1997-03-21
PRIOR PELING DATE: 1997-03-30
PRIOR PELING DATE: 1997-03-30
PRIOR PELING DATE: 1997-03-30
PRIOR PELING DATE: 1997-05-30
PRIOR APPLICATION NUMBER: US 60/048,351
PRIOR APPLICATION NUMBER: US 60/048,351
PRIOR PELING DATE: 1997-05-30
PRIOR PELING DATE: 1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             5-09-966-262-128
Sequence 128
Publication No. US20030050461A1
GENERAL INFORMATION:
   ; LENGTH: 53
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-984-245-128
                                                                                                                                                                                                                                                                                                                      18 ITGGASG 24
                                                                                                                                                                                                                                                                                                                                                                             15 ITGGASG 21
                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                              ò
```

```
ö
                                                                                                                                                                                                                                   ; OTHER INFORMATION: Xaa equals any of the naturally occurring L-amino acids US-10-106-698-4341
                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 11
US-10-291-190-45
US-10-291-190-45
Sequence 45, Application US/10291190
Publication No. US20030171549A1
GENERAL INFORMATION:
APPLICANT: Structural Genomix, Inc.
APPLICANT: Park, Reans G.
APPLICANT: Buchanan, Sean Grant
APPLICANT: Buchanan, Sean Grant
APPLICANT: Sadder, J. Michael
TITLE OF INVENTION: CRYSTALS AND STRUCTURES OF YIM PROTEINS
FILE REPERENCE: 52498-20009.00
CURRENT APPLICATION NUMBER: US/10/291,190
CURRENT FILING DATE: 2002-11-08
PRIOR FILING DATE: 2002-11-08
PRIOR APPLICATION NUMBER: US 60/337,769
PRIOR APPLICATION NUMBER: US 60/337,769
NUMBER OF SEQ ID NOS: 5201-11-09
SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                              ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: Oblean, Kari L.
APPLICANT: Oblean, Kari L.
APPLICANT: Zyskind, Judith W.
APPLICANT: Zyskind, Judith W.
APPLICANT: Trawick, John D.
APPLICANT: Yamamoto, Robert T.
APPLICANT: Yamamoto, Robert T.
APPLICANT: Xu, H. Howard
TITLE OF INVENTION: Identification of Essential Genes in
TITLE OF INVENTION: Prokaryotes
TITLE OF INVENTION: Prokaryotes
TILE OF INVENTION NUMBER: US/09/815,242
CURRENT FILING DATE: 2001-03-21
PRIOR APPLICATION NUMBER: 60/191,078
PRIOR APPLICATION NUMBER: 60/191,078
PRIOR APPLICATION NUMBER: 60/206,848
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 181;
                                                                                                                                                                                                                                                                                                                                          Length 92;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 12; Le:
0. 1:1e+02;
                                                                                                                                                                                                                                                                                                                                       DB 15;
                                                                                                                                                                                                                                                                                                                                                                                                              0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0; Mismatches
                                                                                                                                                                                                                                                                                                                                       Ouery Match 2.6%; Score 7; E
Best Local Similarity 100.0%; Pred. No.
Matches 7; Conservative 0; Mismatch
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2.6%; Score 7;
100.0%; Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 13753, Application US/09815242
Patent No. US20020061569A1
GENERAL INFORMATION:
APPLICANT: Haselbeck, Robert
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ; TYPE: PRT
; ORGANISM: D. radiodurans (15806071)
US-10-291-190-45
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Best Local Similarity 100.0%;
Matches 7; Conservative 0
                                   LENGTH: 92
TYPE: PRT
ORGANISM: Homo sapiens
                                                                                                                                                                   NAME/KEY: MISC_FEATURE LOCATION: (49)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 116 RVLSVNV 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  24 GIGETTA 30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  80 GIGETTA 86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2 RVLSVNV 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 12
US-09-815-242-13753
SEQ ID NO 4341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
                                                                                                                                       FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 4341, Application US/10106698
Publication No. US20030109690A1
REBEREATON:
APPLICANT: Ruben et al.
TITLE OF INVENTION: Colon and Colon Cancer Associated Polynucleotides and Polypeptide
FILE REFRENCE: PA00519.
CURRENT APPLICATION NUMBER: US/10/106,698
CURRENT FILING DATE: 2002-03-27
PRIOR FILING DATE: 2000-09-28
PRIOR FILING DATE: 1999-09-29
PRIOR FILING DATE: 1999-09-29
PRIOR FILING DATE: 1999-11-03
NUMBER OF SEQ ID NOS: 8564
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ..
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match 2.6%; Score 7; DB 11; Length 53; Best Local Similarity 100.0%; Pred. No. 37; Matches 7; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match 2.6%; Score 7; DB 15; Length 53; Best Local Similarity 100.0%; Pred. No. 37; Matches 7; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 128, Application US/10143090
Publication No. US20030069406A1
GENERAL INFORMATION:
GURRET FILING DATE: 2002-05-13
FRIOR APPLICATION NUMBER: 09/154,707
FRIOR FILING DATE: 1998-09-17
GENERAL INFORMARE: PAGENTIN Ver. 2.0
GENERAL INFORMATION OF 128
GENERAL INFORMATION OF 1200
GENERAL INFORMATION OF
                 PRIOR APPLICATION NUMBER: US 60/048,154
PRIOR FILING DATE: 1997-05-30
PRIOR FILING DATE: 1997-05-30
PRIOR PLING DATE: 1997-08-05
PRIOR APPLICATION NUMBER: US 60/056,370
PRIOR PLING DATE: 1997-08-19
PRIOR FILING DATE: 1997-08-19
PRIOR FILING DATE: 1997-10-02
NUMBER OF SEQ ID NOS: 343
SOFTWARE: PATENTIN VEX. 2.0
SEQ ID NO 128
FILING DATE: 1997-05-30
                                                                                                                                                                                                                                                                                                                                                                                                                                           TYPE: PRT
ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TYPE: PRT
ORGANISM: Homo sapiens
US-10-143-090-128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  18 ITGGASG 24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 18 ITGGASG 24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 15 ITGGASG 21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 10
US-10-106-698-4341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 9
US-10-143-090-128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-09-983-966-128
```

δ 요

δ . 요

```
Best Local Similarity 100.0%; Pred. No. 1.3e+02; Matches 7; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
2.6%; Score 7; DB 15; Le
Best Local Similarity 100.0%; Pred. No. 1.4e+02;
Matches 7; Conservative 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: OMURA, SATOSHI
APPLICANT: IKEDA, HARUO
APPLICANT: IKEDA, HARUO
APPLICANT: SHIRAMA, HIROSHI
APPLICANT: SHIRA, TADAYOSHI
APPLICANT: SHIRA, TADAYOSHI
APPLICANT: AADAYOSHI
APPLICANT: AADAYOSHI
APPLICANT: AAPTORI, MASAHIRA
TITLE OF INVENTION NOVEL POLYNUCLEOTIDES
TURRENT APPLICATION NOVEL POLYNUCLEOTIDES
CURRENT APPLICATION NUMBER: US/10/156,761
CURRENT PRILING DATE: 2002-05-29
PRIOR FILING DATE: 2001-05-30
PRIOR FILING DATE: 2001-08-30
PRIOR FILING DATE: 2001-08-30
NUMBER OF SEQ ID NOS: 15109
SEQ ID NO 9390
LENGTH: 233
                                                                                                                                                                                                                                                                                                                                                               Sequence 9390, Application US/10156761 Publication No. US20030119018A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ) ORGANISM: Streptomyces avermitilis US-10-156-761-9390
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           , ORGANISM: Acinetobacter sp. US-10-272-419-20
                                                                                                            146 STASLSS 152
                                                                                                                                                                                   131 STASLSS 137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        15 VALITGG 21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              6 VALITGG 12
                                                                                                                                                                                                                                                                                                                                          10-156-761-9390
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-09-811-24-144

US-09-811-24-144

US-09-811-24-144

US-09-811-24-144

PROBLECANT VOGE1, Gabriel

APPLICANT VOGE1, Gabriel

APPLICANT VOGE1, Gabriel

FILE OF INVERNION: No. US20020058306A1el G Protein-Coupled Receptors

FILE SPERENCE: ONLEVUE:

CURRENT APPLICATION NUMBER: 60/189, 783

PRIOR PILING DATE: 2000-03-16

PRIOR PILING DATE: 2000-03-29

PRIOR PILING DATE: 2000-03-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match

2.6%; Score 7; DB 9; Length 199;
Best Local Similarity 100.0%; Pred. No. 1.2e+02;
Matches 7; Conservative 0; Mismatches 0; Indels
PRIOR FILING DATE: 2000-05-23
PRIOR APPLICATION WINBER: 60/207,727
PRIOR APPLICATION NUMBER: 60/242,578
PRIOR PLING DATE: 2000-05-23
PRIOR PLING DATE: 2000-10-23
PRIOR PLING DATE: 2000-11-27
PRIOR APPLICATION NUMBER: 60/253,625
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR PLING DATE: 2000-11-27
PRIOR PLING DATE: 2000-12-22
PRIOR PLING DATE: 2001-02-16
NUMBER OF SEQ ID NOS: 14110
SOFTWARE: FastSEQ for Windows Version 4.0
SOFTWARE: FastSEQ for Windows Version 4.0
STRO ID NO 13753
LENGTH: 199
TYPE: PRI
TYPE: PRI
ORGANISM: Salmonella typhi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-811-284-144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                196 PTALGKK 202
```

· 0

Length 233; 0; Indels

```
US-10-272-419-20

1 Sequence 20, Application US/10272419

1 Sequence 20, Application US/10272419

2 GENERAL INFORMATION:

2 APPLICANT: THOWAR-10N:

3 APPLICANT: THOWARS, STUART

3 APPLICANT: THOMAS, STUART

4 APPLICANT: THOMAS, STUART

5 TITLE OF INVENTION: BIOLOGICAL METHOD FOR THE PRODUCTION OF ADIPIC ACID AND TITLE OF INVENTION: BIOLOGICAL METHOD FOR THE PRODUCTION OF ADIPIC ACID AND TITLE OF INVENTION: UNDERS: US/10/272,419

5 TITLE OF INVENTION: UNDERS: US/10/272,419

5 CURRENT FILING DATE: 2002-10-16

6 PRIOR APPLICATION NUMBER: US/252,553

6 NUMBER OF SEQ ID NOS: 32

6 SEQ ID NO 20

6 LENGTH: 251

7 TYPE: PRI T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match

2.6%; Score 7; DB 15; Length 251;
Best Local Similarity 100.0%; Pred. No. 156+02.
Matches 7; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             14 KVALITG 20
```

2.6%; Score 7; DB 9; Length 204;

, * Query Match

Search completed: October 23, 2003, 13:15:07 Job time: 110 secs

TAIS PAGE BLANK (USPTO)

us-09-673-918a-2.oligo.rpr

hypothetical prote probable oxidoredu probable tropinone probable tropinone	probable tropinone probable ATP-depen	POLICOI-0-PRINGULA Probable sorbitol- D-glucitol-6-phosp cis-2,3-dihydrobip	C18-2,3-d1hVdroblp azaarene carbazole oxidoreductase, sh hypothetical prote	oxidoreductase alr hypothetical prote probable dehydroge	probable glutathio ARP protein (impor	AKF PIOCEIN - AIAD short-chain alcoho hymothetical prote	rypounector proces ribosomel protein	hypothetical prote hypothetical prote	myoglobin, body wa hypothetical prote	hypothetical prote photosystem I chai	thermoresistant gl conserved hypothet	probable hydrolase tryptophan repress	probable alconol of hypothetical prote	conserved nypotnet probable transcrip	filamin, muscle	sos ildosomal proc similar to proteas exidereductase bru	short-chain dehydr prohable oxidoredu	3-oxoacyl-(acyl-ca	probable beta-keto short-chain dehydr	short-chain dehydr probable short-cha	hypothetical prote	hypothetical prote	probable membrane short chain debydr	reductase (AL13282	hypothetical prote tropinone reductas	dehydrogenase Atu3	short chain dehydr 1-2.3-butanediol d	L-iditolsorbitol d	oxidoreductase ucp	2,5-dichloro-2,5-c	2-deoxy-D-gluconat	probable short-cha	sporulation protei	nypormetreat proce C-alpha-dehydrogen	hypothetical prote probable oxidoredu
2 E85069 2 B95274 2 A84695 2 B84695																																			
255 256 260 262	265	268 268 277	222 278 279	285 296 299	44 62 62 60 60 60 60	657	133	141 146	153 154	159	172 181	191	200	215	231	233 233 247	245	248	248 248	248 251	252	255	255	257	261	261	261	261	264	271	281	286	295	305	323 328
01 01 01 01 0 0 0 0 0																					•		•		•				•		•				
<b>&amp; &amp; &amp; &amp;</b>	<b>დ</b> დ (	. co co co c		ထေထ	<b>∞ ω</b> (	7 00 00			7	7	7	r r 1			-  -				, ,	7	r 1		<i></i>	, ,	<b>,</b>	, ,	<i>.</i> .		7 1	, ,	7	- 1-	7	, ,	7
31 1td. 33	34	h time 40 Seconds 35 t alignments) 38 Million cell updates/sec 39	40 41 42 1DGGFSVCNSVIKVFQYPDS 273	ል ተመመር መመር መመር መመር መመር መመር መመር መመር መመር መመ	477	₩.4.	283308		56	85 .	60	63		being printed, ion.	000	Description 71	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	short cha		1-dehydrog D-gluconat															hypothetical prote probable dehydroge   102
GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen	- protein search, using sw model	October 23, 2003, 12:59:30 ; Search ti (without al	US-09-673-918A-2 ore: 273 1 MQLRTAPARRLEGKVALITGIDGGFS	e: OLIGO Gapop 60.0 , Gapext 60.0	segs,	0	of hits satisfying chosen parameters:	seq length: 0	3: Listi	PIR 76:*	1: pir1:* 2: pir2:*	3: pir3:* 4: pir4:*	the number of results predicted by	hal to the score of triss of the total score	SUMMARIES	Query Match Length DR ID		6.2 284 2 T02	5.9 283 2 H85 4.8 267 2 T11	3.7 255 1 S39 3.7 255 2 C87	3.7 256 2 AD2	0 3.7 285 2 F96	3.3 15 2 PC4	3.3 257 2 T02	3.3 258 2 T02	3.3 259 2 AI3	3.3 259 2 H98	3.3 272 2 AG3	3.3 275 2 C70	3.3 287 2 G83	3.3 288 2 C96	3.3 689 2 H70	2.9 158 2 AD3	2.9 248 2 B97	8 2.9 252 2 B90495 8 2.9 253 1 S17711

10   10   10   10   10   10   10   10	hypothetical prote VAT-1 protein - Pa hypothetical prote ubiquinol-cytochro probable export pr flagellar blosynth probable outer mem probhade pil prote mem probhade pil prote	holin profein homo probable signal re hypothetical prote hypothetical prote hypothetical prote hypothetical prote hypothetical prote ribosomal protein hypothetical protein hypothetical protein hypothetical protein hypothetical protein	hypothetical proce hypothetical proce hypothetical proce histone H3 (clone conserved hypothet ig heavy chain v r probable periplasm conserved hypothet conserved hypothet conserved hypothet conserved hypothet conserved hypothet conserved hypothet procein hypothetical procein hypothetical procein	conserved hypothet nucleocapsid prote nucleocapsid prote nucleocapsid prote hypothetical protein probable histone H conserved hypothetical prote	Jacobacyl-legacyl-ca hemcglobin alpha c hemcglobin alpha c hemcglobin alpha I hemcglobin alpha I hemcglobin alpha I hemcglobin alpha I hemcglobin alpha I hemcglobin alpha I hypothetical prote hypothetical prote hypothetical prote hypothetical prote inbosomal protein hypothetical prote hypothetical prote conserved hypothet conserved hypothetical hypothetical prote hypothetical prote cyptelie-cal prote hypothetical prote hypothetical prote
2.6 3328 2 8720 695 7 7 2.6 3328 2 8720 695 7 7 2.6 3328 2 8720 695 7 7 2.6 3328 2 8720 695 7 7 2.6 3328 2 8720 695 7 7 2.6 3328 2 8720 695 7 7 2.6 3328 2 8720 695 8 7 7 2.6 3323 2 8720 695 8 7 7 2.6 3323 2 8720 695 8 7 7 2.6 3323 2 8720 695 8 7 7 2.6 3323 2 8720 695 8 7 7 2.6 3320 8 7 7 7 2.6 3320 2 8720 695 8 7 7 2.6 3320 2 8720 695 8 7 7 2.6 3320 2 8720 695 8 7 7 2.6 320 695 8 7 7 2.6 320 695 8 7 7 2.6 320 695 8 7 7 2.6 320 695 8 7 7 2.6 4428 2 8720 695 8 7 7 2.6 455 8 2 1720 695 7 7 2.6 455 8 2 1720 695 7 7 2.6 455 8 2 1720 695 7 7 2.6 455 8 2 1720 695 7 7 2.6 455 8 2 1720 695 7 7 2.6 455 8 2 1720 695 7 7 2.6 455 8 2 1720 695 7 7 2.6 455 8 2 1720 695 7 7 2.6 455 8 2 1720 695 8 7 7 2.6 455 8 2 1720 695 8 7 7 2.6 455 8 2 1720 695 8 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 7 2.6 455 8 2 1720 695 8 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	00000000000000000000000000000000000000	6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6		6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6
7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	probable oxidiredu ubiquinol-cytochro hypothetical prote GDPmannose 4,6-deh hypothetical prote GDP-mannose dehy GDP-mannose dehydr		ribosomal protein mRS permease (drug hypothetical prote protein C3384.7 [i conserved hypothet conserved hypothet hypothetical prote hypothetical prote conserved hypothet flagallum specific glutathione reduct amino acid antipor aminopeptidase BH3 hypothetical prote hypothetical prote instaline fixed	spore germination potassum-transpor testis-specific ki hypothetical prote hypothetical prote hypothetical prote amine oxidase (cop DNA ligase Atu2082 DNA ligase (polyde probable serine/th glucose dehydrogen glucose dehydrogen glucose dehydrogen glucose dehydrogen	probable excnuclea probable excnuclea probable excnuclea probable excnuclea probable excnuclea probable phospholi coor protein precu assimilatory nitra oxoglutarate dehyd MCSI protein - yea hypothetical prote hypothetical protein probable membrane conserved hypothetical protein gCNNI homolog - fis hypothetical protein hypothetical protein hypothetical protein hypothetical protein hypothetical protein hypothetical protein hypothetical grotein hypothetical protein hypothetical societing hypothetical societing hypothetical protein hypothetical hypothetical protein hypothetical protein hypothetical hypothetica
	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	20222222222222222222222222222222222222	7 2 5 6 8 2 2 2 2 2 6 8 8 2 8 2 8 2 8 2 8 2 8

conserved hypothet hypothetical prote probable serine pr ABC transporter, A dethiobicin synth adenosylhomocystei hypothetical prote glycine-rich prote ribosomal protein ribosomal protein ribosomal protein ribosomal protein acylpyruvate hydro	acyptyruvace nyuro orotidine 5' monop glycine betaine/l- hypothetical proce chemotaxis protein lexA protein - Myc conserved Mypothet protein protein F10A5.19 {     probable 3-oxoacyl ribosomal protein hypothetical prote 50S ribosomal protein hypothetical protein conserved hypothetical protein conserved hypothetical protein conserved hypothetical protein conserved hypothetical protein hypothetical protein conserved hypothetical protein accorectyl-ca accorectyl-ca from your growacyl-(acyl-ca 3-oxoacyl-(acyl-ca ABC transporter, A probable lactam ut probable lactam ut probable lactam ut	conserved apporter hypothetical prote protein FS303.4 (in mucleocapaid prote class II histocomp this protein - Bsc thiamin blosynthes thiamin blosynthes hypothetical prote hypothetical axido dihydroorotate deh oxoacyl (acyl-ca hypothetical axido dihydroorotate deh oxoacyl (arrier p probable short-cha 3-oxoacyl-(acyl-ca bile acid dehydrox probable dehydrox probable dehydroge oxidoreductase, sh probable short-cha probable short-cha probable short-cha probable dehydroge oxidoreductase, sh 3-oxoacyl-acyl-ca hypothetical prote oxidoreductase, sh 3-oxoacyl-acyl-ca hypothetical prote
22 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	25 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	362 6 2.2 244 2 AF0 588 365 6 2.2 244 2 CA5605 366 6 2.2 244 2 CA5605 368 368 6 2.2 245 2 S2990 6 2.2 245 2 C65206 370 6 2.2 245 2 C65206 371 6 2.2 245 2 C65206 372 6 2.2 246 2 H4136 2 H4136 6 2.2 246 2 H2219 373 6 2.2 247 2 C6504 373 6 2.2 247 2 C6504 373 6 2.2 248 2 C6504 373 6 2.2 249 2 D75027 373 6 2.2 249 2 D7504 2 D
hypothetical prote staphylokinase - p staphylokinase - p STAPHYLOKINASE PRE benzoate 1,2-dioxy beta protein homol related to H+-tran ribosome releasing probable bacteriop hypothetical prote PTS system, IIA co	contractine tube p hypotherical prote phage-related cont probable regulator probable negulator probable DoF zinc hypotherical prote diacylglycerol kin hypotherical prote modulates DNA topo hypotherical prote hypotherical prote hypotherical prote hypotherical prote hypotherical prote hypotherical prote finger protein XFG ECF family sigma f mut7/nudix family conserved hypother hypotherical prote acetyltransferase hypotherical prote alkyl hydroperoxid unknown protein, 9 hypotherical prote alkyl hydroperoxid unknown protein, 9 hypotherical prote hypotherical prote	approspherical prote icmC protein - Leg probable membrane prophage pil prote prophage pil prote prophage pil prote prophage pil prote probable inhibitor probable (DP-alcoh probable transcrip glutathione transcrip glutathione transcrip probable exported probable exported probable exported probable exported probable adenylate probable adenylate probable adenylate probable adenylate probable lexa prote probable lexa prote transforming prote probable lexa prote probable lexa prote probable lexa prote transforming prote probable lexa prote transforming prote probable lexa prote probable lexa prote transforming prote probable lexa prote transforming prote probable lexa prote response regulator hypothetical prote probable phox1 pro glycine-rich prote dethiobiotin synth
6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	20	299 6 2.2 194 2 748.57 291 6 2.2 194 2 718336 292 6 2.2 194 2 718336 293 6 2.2 194 2 718336 294 2 718336 295 6 2.2 195 2 090415 296 2 2 196 2 A66406 297 6 2.2 196 2 A60446 298 6 2.2 200 2 AC0343 299 6 2.2 200 2 AC0343 301 6 2.2 201 2 D82896 302 6 2.2 201 2 D82896 303 6 2.2 201 2 D82896 304 6 2.2 201 2 P82896 305 6 2.2 201 2 P82896 306 6 2.2 201 2 P82896 307 6 2.2 201 2 D82896 308 6 2.2 201 2 P82896 309 6 2.2 201 2 B82896 310 6 2.2 201 2 B82896 311 6 2.2 201 2 P71306 312 6 2.2 211 2 S45464 313 6 2.2 215 2 A95879 314 6 2.2 216 2 B71316 315 6 2.2 216 2 B71316 316 6 2.2 216 2 B71316 317 6 2.2 218 2 B71262 318 6 2.2 200 2 H0425 319 6 2.2 220 2 D71677 319 6 2.2 220 2 D71677 319 6 2.2 220 2 S19933 320 6 2.2 220 2 S19933

septum site-determ probable transport probable metal res probable metal res hypothetical prote glucose 1-dehydrog periplasmic amino phosphare transport phosphare transport phosphomethylpyrim 3-oxacayl-ca outer surface prot	thiamin biosynthes probable dehydroge hydroxycthylthiaco outer surface prot nicotinate-nucleot transketolass (EC hypothetical prote fransketolass (EC hypothetical prote faxt s'-region hyp hypothetical prote faxt s'-region hyp hypothetical prote protections and protections and protections are protected by the single protections are protected by the single protected by the	hypothetical prote probable dehydroge probable Rehigh fami oxidoreductaes ycg hypothetical prote transcription regu hypothetical prote probable bacterioc hypothetical prote hypothetical prote hypothetical prote short-chain dehydragen hypothetical prote	dehydrogenaës Atu5 conserved Mypothet hypothetical prote hypothetical prote probable 3',5'-cyc hypothetical prote beta-alanine synth proline transport hypothetical prote probable integral hypothetical prote oxidoreductase hom oxidoreductase hom oxidoreductase hom probable short-cha 3'oxoavyl-da probable oxidoredu oxidoreductase Atu probable oxidoredu integrase/recedu transporter, dme f malate dehydrogena probable bex - Myc integrase/recombin integrase/recombin
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2	6 2.2 287 2 AG193 6 2.2 288 7 2 AG193 6 2.2 289 2 AG1901 6 2.2 292 2 E64614 6 2.2 292 2 E64614 6 2.2 293 2 C90032 6 2.2 294 2 AG193 6 2.2 294 2 AG193 6 2.2 297 2 AG193 6 2.2 298 2 AG193 6 2.2 298 2 AG193 6 2.2 300 2 AG193 7 AG
4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	/ 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	12 12 12 12 12 12 12 12 12 12 12 12 12 1
3-oxoacyl-(acyl-ca probable short-cha thiamin biosynthet thiamin biosynthes HeaA protein [impo hypothetical prote short-chain dehydr 2-deoxy-D-gluconat cis-1, 2-dihydroxyc cis-1, 2-dihydroxyc	2-deoxy-D-gluconat probable [imported 2-keto-3-deoxygluc hypothetical prote hypothetical prote dehydrogenase - Aq 3 (or 17)beta-hydro 3-oxoacyl-(acyl-ca short chain dehydr hypothetical prote hypothetical prote probable histidine sorbitcol utilizati thiamin biosynthes oxidoreductase, sh enoyl-CoA hydratas molybdopterin bios probable dehydrates molybdopterin bios probable dehydroge uncharacterized se	hypothetical prote hypothetical prote probable dehydroge expanein - upland ferredoxin-NADP r cis-1,2-diphydro-1, cis-1,2-diphydro-1, cis-1,2-diphydro-1, probable membrane conserved hypothet hypothetical prote 3-hydroxyacyl-CoA probable \$4b63 pro probable \$4b63 pro probable \$4b63 pro probable \$6b63 pro probable cand dehydr probable conserved probable conserved	1,6-dihydroxycyclo exodeoxyribonuclea conserved hypothet ribosomal protein N-acetylmuramoyl-L phenylacetic acid HAD superfamily hy 3-oxoacyl-(acyl ca phosphorylation-ac hypothetical prote conserved hypothet conserved hypothet conserved hypothet hypothetical prote thiamin biosynthes transcription requ hypothetical prote cis-1, adhydro-1, hypothetical prote suppressor protein oxidoreductase XF2 probable gluconate
	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	22222222222222222222222222222222222222	6 2.2 262 2 13125 6 2.2 262 2 13125 6 2.2 263 2 87326 6 2.2 264 2 86974 6 2.2 264 2 86974 6 2.2 264 2 86974 6 2.2 264 2 86974 6 2.2 265 1 WMBPG1 6 2.2 265 2 87024 6 2.2 265 2 1988 6 2.2 265 2 1988 6 2.2 265 2 198318 6 2.2 266 2 131264 6 2.2 266 2 131264
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	64 64 64 64 64 64 64 64 64 64 64 64 64 6	44444444444444444444444444444444444444	44444444444444444444444444444444444444

probable UDPglucos inosine-uridine pr 3-dehydroguinare d hypothetical prote conserved hypothet probable sugar-bin probable sugar-bin probable sugar-bin probable sugar-bin probable sugar-bin probable sugar-bin ADPglyceromanno-he tryptophanyl-tRNA conserved hypothet succincalycan bios tryptophanyl-tRNA tryptophanyl-tRNA hypothetical prote transforming dehyd hypothetical prote hypothetical prote conserved hypothetical prote hypothetical prote hypothetical prote hypothetical prote conserved hypothetical prote transcription regu alcohol dehydrogen hypothetical prote hypothetical prote transcription regu electron transfer hemagglutinin   hemagglutinin   hemagglutinin   hemagglutinin   hemagglutinin   hemagglutinin   hemagglutinin   hemagglutinin	hemagglutinin 1 - hypothetical prote probable trytophan rod shape-determin hemagglutinin 1 -
2 139563 2 848698 2 848698 2 848698 2 848698 2 848698 2 848698 2 8486812 2 868623 2 868623 2 868627 2 868628 2 868628 3 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	
######################################	
Ე Ე Ე Ე Ე Ე Ე Ე Ე Ე Ე Ე Ე Ე Ე Ე Ე Ე Ე	<i>º º º º º º º º º º º º º º º º º º º </i>
10 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	672 674 674 675 677 679 681 682 683 685 685 685
	cggurca 001 13 sen 13 sen 15 cen
hypothetical prote phosphogluconate d cronserved hypothet transcription regul probable bpoB prot eyetaine shynthase hypothetical prote probable capturition dipeptidase PAB218 upoprotetical prote probable cytochrom probable cytochrom probable transcription regul probable transcription regul probable protectical prote hypothetical prote probable protectical prote probable protectical prote	[acy]-carrier-prot transcription regu 3-oxoacyl-[acy]-ca asparaginase homol asparaginase homol formate hydrogenly probable epimerase asparaginase (EC 3 genome polyprotein NADH dehydrogenase probable DNA-(apur delta-aminolevulin hypothetical prote hypothetical prote
F81331 7036998 7046998 7046998 7046998 7046998 7048298 7048298 7048298 7048298 7048298 7048298 7048298 7048298 7048293 7048293 7048293 705699 70666 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 70793 707	071633 497589 401317 401689 401689 399254 318999 318999 100265 464470 471968 171968 389773
000000000000000000000000000000000000000	88888888888888888888888888888888888888
ํ ฃ๖ ฃ ฃ ฃ ฃ ฃ ฃ ฃ ฃ ฃ ฃ ฃ ฃ ฃ ฃ ฃ ฃ ฃ ฃ	<i>ᲐᲡᲐᲡᲐᲡᲡᲡᲡᲡᲡᲡᲡᲡᲡᲡᲡᲡᲡᲡᲡᲡᲡᲡᲡᲡᲡᲡᲡᲡᲡᲡᲡᲡᲡᲡᲡ</i>
ႷႼႯႷႷႷႷႷႷႷႷႷႷႷႷႷႷႷႷႷႷႷႷႷႷႷႷႷႷႷႷႷႷႷႷႷႷႷ	599 600 600 602 603 603 603 603 601 610 611

hypothetical prote spore cost protein methanol dehydroge ubiquinol-cytochro hypothetical prote hypothetical prote NAD/NADP octopine/ hypothetical prote probable comzyme di-Nacetylchitobi sedohepullose-bisp	hypothetical prote hypothetical prote hypothetical prote ubiquinol-cytochro xylose isomerase ( xylose isomer	ubiquinol-cytochro hypothetical prote ubiquinol-cytochro probable integral CMP-N-acetylneuram hypothetical prote ubiquinol-cytochro ubiquinol-cytochro (R.R.)-butanediol d capB protein - Bac ubiquinol-cytochro hypothetical prote protein-tyrosine-p uracil permesse - hypothetical prote	onserved hypother conserved hypother cappid like accept. Cappid like renin-binding prote hypothetical prote mevalonete kinase probable valine-py calreticulin precu threonine synthase probable flavoprote hypothetical prote aminotransferase n selencysteine lya sprobable amintrans hypothetical prote tyrosine transport probable integrase probable integrase hypothetical prote two component sens hypothetical prote two component sens hypothetical prote ammonium transport conserved hypothet cal prote two component sens hypothetical prote ammonium transport conserved hypothetical prote ammonium transport probable MFS trans
6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	66 66 66 66 66 66 66 66 66 66 66 66 66	800 800 800 800 800 800 800 800
	tical prote trical prote by year all prote the semialde protein m munopeptida mase relate pridase P A e transcrip	hypothetical prote fructose-bisphosph hypothetical prote pleiotropic regula dTDPglucose 4,6-de dTDP-glucose 4,6-de dTDP-glucose 4,6-de hypothetical prote TIK7.4 protein - A hypothetical prote probable antiporte membrane fusion pr glutamate ammonia NADH flavin oxidor	avin oxidor  allular sign  llular sign  rectivated  re
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.	44444000000000000000000000000000000000	22222222222222222222222222222222222222	2.2 365 2 AB020590 2.2 367 2 JG6138 2.2 367 2 JG6138 2.2 368 2 BC16290 2.2 368 2 BC16290 2.2 368 2 BC16290 2.2 368 2 BC16290 2.2 371 2 AB0232 2.2 373 2 B95871 2.2 374 2 JG2124 2.2 374 2 JG2124 2.2 375 2 AC0484 2.2 377 2 B65198 2.2 377 2 B75192 2.2 377 2 S77051 2.2 377 2 S770646 2.2 377 2 S77051 2.3 378 2 AP15104
ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט	ม ข ข ข ข ข ข ข ข ข ข ข ข ข ข ข ข ข ข ข	ง ง <b>ง ง</b> ง ง ง ง ง ง ง ง ง ง ง ง ง ง ง	72727 72727 72329 72329 72329 72329 72329 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529 72529

us-09-673-918a-2.oligo.rpr

glutamate-ammonia unknown protein F2 dibydrolipoamide d transposase - Clos 2-isopropylmalate carboxypeptidase E carboxypeptidase E carboxypeptidase E carboxypeptidase E hypothetical prote dibydrolipoamide d	dainydroingoamide a phosphodiuconate d hypothetical prote hypothetical prote hypothetical prote dinyochetical prote dinyochetical prote dinyochetical prote dinyochetical prote dinyochetical prote hypothetical prote probable Glu-Enna hypothetical prote probable Glu-Enna hypothetical prote probable c-type cy probable c-type cy probable phosphate permease probable phosphate permease probable aldehyde uracil permease probable aldehyde uracil permease probable aldehyde uracil permease aldehyde dehydroge heat shock protein hypothetical protein hypothetical protein hypothetical protein tibosomal protein hypothetical protein carboxypeptidase Bhypothetical protein transcription fact hypothetical protein spindle pole body-probale cytokinin	hypotherical prote actin-binding 260K hypotherical prote sucrose transport hypotherical prote sucrose transport hypotherical prote aldehyde dehydroge PTS system, (possi hypotherical prote legumin - Welwitsc hypotherical prote hypotherical prote dypotherical prote cytokinin oxidase
6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	918 6 2.2 478 2 AR85459 920 6 2.2 479 2 AR85459 921 6 2.2 480 2 T29720 922 6 2.2 480 2 T29720 923 6 2.2 481 2 S69808 924 6 2.2 481 2 T33733 925 6 2.2 481 2 T33733 927 6 2.2 481 2 T33733 928 6 2.2 481 2 T327136 930 6 2.2 484 2 T261405 931 6 2.2 484 2 T261405 933 6 2.2 484 2 T26136 934 6 2.2 484 2 T26136 935 6 2.2 489 2 T2518 937 6 2.2 489 2 D75512 938 6 2.2 490 1 C57150 939 6 2.2 490 2 D75213 939 6 2.2 490 2 T2518 940 6 2.2 490 2 T2518 941 6 2.2 490 2 D75212 942 6 2.2 490 2 D75212 943 6 2.2 500 1 TTHUCI 944 6 2.2 500 2 T25140 945 6 2.2 500 1 TTHUCI 946 6 2.2 500 2 T25140 950 6 2.2 500 2 T25140 951 6 2.2 500 2 T25140 952 6 2.2 500 2 T25140 953 6 2.2 500 2 T25140 954 6 2.2 500 2 T25140 955 6 2.2 500 2 T25140 956 6 2.2 500 2 T25140 957 6 2.2 500 2 T25140 958 6 2.2 500 2 T25140 959 6 2.2 500 2 T25140 950 6 2.2 500 2 T25140 950 6 2.2 500 2 T25140 950 7 F845780	6 2.2 515 2 2 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6
renin-binding prot matrin 3 - human ( two-component sens maltose/maltodextr renin-binding prot N-acylneuraminate mannanase A - Pseu conserved hypothet maltose/maltodextr probable heat-shoc hypothetical prote hypothetical prote	tetrahydrofolyjpol hypothetical prote permeases homolog putrescine-cunithi 3-hydroxyisobutyry hypothetical prote transcobalamin I p probable protein, conserved hypothet probable transport membrane protein, conserved hypothet conserved hypothet conserved hypothet hypothetical prote hypothetical protein hypothetical protein hypothetical	
2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2	6 2.2 429 2 72914 6 2.2 429 2 71491 6 2.2 429 2 71491 6 2.2 429 2 71491 6 2.2 429 2 71491 6 2.2 429 2 71491 6 2.2 429 2 71491 6 2.2 429 2 71491 6 2.2 429 2 71491 6 2.2 433 2 714651 70 6 2.2 433 2 714652 6 2.2 433 2 714652 6 2.2 433 2 714652 6 2.2 441 2 712531 70 6 2.2 441 2 712531 70 6 2.2 441 2 712531 6 2.2 441 2 712531 6 2.2 441 2 712531 6 2.2 441 2 712531 6 2.2 441 2 712531 6 2.2 441 2 712531 70 70 70 70 70 70 70 70 70 70 70 70 70	20000000000000000000000000000000000000

us-09-673-918a-2.oligo.rpr

ö

```
probable alcohol dehydrogenase [imported] - Arabidopsis thaliana
C;Species: Arabidopsis thaliana (mouse-ear cress)
C;Species: Arabidopsis thaliana (mouse-ear cress)
C;Species: Arabidopsis thaliana (mouse-ear cress)
C;Species: 16-Feb-2001 #sequence_revision 16-Feb-2001 #text_change 02-Mar-2001
C;Accession: H85039
R;anonymous, The European Union Arabidopsis Genome Sequencing Consortium, The Cold Spring Mature 402, 769-777, 1990
A;Title: Sequence and analysis of chromosome 4 of the plant Arabidopsis thaliana.
A;Reference number: A85001; MUID:20083488; PMID:10617198
A;Accession: H8503
A;Accession: H
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Cispecies: Vigna unguiculata (cowpea)
Cipate: 05-Nov-1999 #text_change 20-Jun-2000
Cipate: 05-Nov-1999 #sequence_revision 05-Nov-1999 #text_change 20-Jun-2000
Riuchi, S.; Yanaguchi-Shinozaki, K.; Urao, T.; Shinozaki, K.
J. Plant Res. 109, 415-424, 1996
A; Plant Res. 109, 415-424, 1996
A; Reference number: 217293
A; Reference number: 217293
A; Accession: T11579
A; Molecule type: mRNA
A; Molecule type: mRNA
A; Residues: 1-267 < IUC>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        glucose 1-dehydrogenase homolog ywfD - Bacillus subtilis
N;Alternate names: protein ipa-82d
N;Alternate names: protein ipa-82d
C;Contains: probable dehydrogenase (EC 1.1.1.-)
C;Species: Bacillus subtilis
C;Species: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 16-Jun-2000
C;Accession: S39737; E70055
R;Glaser, P.; Kunst, F.; Arnaud, M.; Coudart, M.P.; Gonzales, W.; Hullo, M.F.; Ionescu,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A;Cross-references: EMBL:D88121
C;Superfamily: ribitol dehydrogenase; short-chain alcohol dehydrogenase homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              .;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match

4.8%; Score 13; DB 2; Length 267;
Best Local Similarity 100.0%; Pred. No. 3.1e-05;
Matches 13; Conservative 0; Mismatches 0; Indels
Length 284;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match

5.9%; Score 16; DB 2; Length 283;
Best Local Similarity 100.0%; Pred. No. 2.5e-08;
Matches 16; Conservative 0; Mismatches 0; Indels
Ouery Match
6.2%; Score 17; DB 2; Length 284
Best Local Similarity 100.0%; Pred. No. 2.38-09;
Matches 17; Conservative 0; Mismatches 0; Indels
                                                                                                                                           10 RLEGKVALITGGASGIG 26
                                                                                                                                                                                            13 RLEGKVALITGGASGIG 29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        11 LEGKVALITGGASGIG 26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         18 LEGKVALITGGASGIG 33
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       177 AVELGOFGIRVNC 189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    178 AVELGGFGIRVNC 190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                               ò
                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ठ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                T02257
probable short chain alcohol dehydrogenase - common tobacco
C;Species: Nicotiana tabacum (common tobacco)
C;Species: Office: Of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Short chain alcohol dehydrogenase homolog - common tobacco
NyAlternate names: TFHP-1 protein
NyAlternate names: TFHP-1 protein
Cipace: 24-Mar.1999 #sequence_revision 24-Mar-1999 #text_change 21-Jul-2000
Cipace: 24-Mar.1999 #sequence_revision 2000
Cipace: 24-Mar.1999 #sequence armap. M.; Yoshida, K.; Takano, M.; Shinmyo, A.
A; Kawamorto, T.; Sekine, M.; Yoshida, K.; Takano, M.; Shinmyo, A.
A; Reference number: 215039; MUID:95004656; PMID:7920706
A; Residues: 1-234 <KAW>
A; Residues: 1-234 <KAW>
A; Residues: 1-234 <KAW>
A; Residues: 1-234 <KAM>
A; Residues: 1-234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ô
                                                                                                                                                                                                                                                                                      hypothetical prote
hypothetical prote
cytokinin oxidase
cytokinin oxidase
hypothetical prote
arylsulfatase PA01
hypothetical prote
D-ribulokinase (EC
                                probable replications
probable replications
flagellar hook-as
deoxycytidylate de
arylsulfatase (EC
Mlo protein - barl
AHNAK-related prot
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  probable permease
malolactic enzyme
DNA polymerase III
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        hypothetical prote
allantoate transpo
probable amino-aci
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 234;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match 6.2%; Score 17; DB 2; Length 234 Best Local Similarity 100.0%; Pred. No. 2e-09; Matches 17; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ALIGNMENTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  T13496
A71649
D83262
                                                                                                                                                       B82354
S69336
T04481
                                                                                                                                                                                                                                                                                                                                                                                                 T51929
D84340
D83622
T04944
AB3632
                                                                                                                                                                                                                                                                                                                                                                T01500
                                                                                                                                                                                                                                                                                                                                T15414
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        10 RLEGKVALITGGASGIG 26
            υυυυυυυυυυυυυυυυυυυ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         13
            a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
```

ö

ö

σ

7120

```
Rikaneko, T.; Nakamura, Y.; Wolk, C.P.; Kuritz, T.; Sasamoto, S.; Watanabe, A.; Iriguchi Nakazaki, N.; Shimpo, S.; Sugimoto, M.; Takazawa, M.; Yamada, M.; Yasuda, M.; Tabata, S Naya Res. 8, 205-213, 2010.

A; Title: Complete Genomic Sequence of the Filamentous Nitrogen-fixing Cyanobacterium Ana A; Reference number: AB1807; MUID:21595285; PMID:11759840

A; Reteus: preliminary

A; Status: preliminary

A; Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   R;DelVecchio, V.G.; Kapatral, V.; Redkar, R.J.; Patra, G.; Mujer, C.; Los, T.; Ivanova, J.; Mazur, M.; Goltsman, E.; Selkov, E.; Elzer, P.H.; Hagius, S.; O'Callaghan, D.; Letess Proc. Natl. Acad. Sci. U.S.A. 99, 443-448, 2002
A;Title: The genome sequence of the facultative intracellular pathogen Brucella melitens A;Reference number: AD3252; PMID:11756688
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      toluenesulfonate zinc-independent alcohol dehydrogenase [imported] - Brucella melitensis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 hypothetical protein F19K6.3 [imported] - Arabidopsis thaliana C;Species: Arabidopsis thaliana (mouse-ear cress)
C;Species: Arabidopsis thaliana (mouse-ear cress)
C;Date: 02-Mar-2001 #sequence_revision 02-Mar-2001 #text_change 23-Mar-2001
C;Accession: F96563
R;Theologis, A.; Ecker, J.R.; Palm, C.J.; Federspiel, N.A.; Kaul, S.; White, O.; Alonso, Chin, C.W.; Chung, M.K.; Conn, L.; Conway, A.B.; Conway, A.R.; Cressy, T.H.; Dewar, K.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Cross-references: GB:BA000019; PIDN:BAB75710.1; PID:g17133146; GSPDB:GN00179 A;Experimental source: strain PCC 7120 C;Genetics: A;Gene: alr4011
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Cross-references: GB:AE008918; PIDN:AAL53525.1; PID:g17984431; GSPDB:GN00191
A;Experimental source: strain 16M
                                                                                                                                                                                                                                                                      Cispecies: Nostoc sp. PCC 7120
A,NOCE: Nostoc sp. strain PCC 7120 is a synonym of Anabaena sp. strain PCC 7
C.Date: 14-Dec-2001 #sequence_revision 14-Dec-2001 #text_change 09-Dec-2002
C,Accession: AD2307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              C,Species: Brucella melitensis
C,Date: 01-Feb-2002 #sequence_revision 01-Feb-2002 #text_change 15-Feb-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A;Map position: II
C;Superfamily: ribitol dehydrogenase; short-chain alcohol dehydrogenase
                                                                                                                                                                                                                                        hypothetical protein alr4011 [imported] - Nostoc sp. (strain PCC 7120)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 256;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 262;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         3.7%; Score 10; DB 2; Ler
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 10; DB 2;
Pred. No. 0.04;
0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            100.0%; Pred. ....
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        3.7%; 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity 100.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match 3.7
Best Local Similarity 100.
Matches 10; Conservative
                         LEGKVALITG 22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      17 LITGGASGIG 26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            24 LITGGASGIG 33
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     11 LEGKVALITG 20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Residues: 1-256 <KUR>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Residues: 1-262 < KUR>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A;Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             C; Accession: AB3545
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Accession: AB3545
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           F96563
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                              В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
Mol. Macrobort, G.; Danchin, A.

Mol. Macrobolt, 10, 317-384, 1993
A.Title Bacillus subbilis genome project: cloning and sequencing of the 97 kb region fr
A.Recreace number: 839655, MUID:95020537; PMID:7934828
A.Accession: S39737
A.Scribin ary incleic acid sequence not shown; translation not shown
A.Scribin ary; nucleic acid sequence not shown; translation not shown
A.Scribin ary; nucleic acid sequence not shown; translation not shown
A.Scribin ary; nucleic acid sequence not shown; translation not shown
A.Scribin ary; nucleic acid sequence was submitted to the EMBL Data Library, June 1993
A.Residues: 1-25 cdLA
A.Residues: 1-25 cdLA
A.Residues: 1-25 cdLA
A.Scribin, S.D.; Emmerson, P.T.; Entian, K.D.; Errington, J.; Fabret, C.; Perrari, E.
A.; Entlich, S.D.; Emmerson, P.T.; Entian, K.D.; Errington, J.; Fabret, C.; Perrari, E.
A.Rithich, S.D.; Emmerson, P.T.; Entian, K.D.; Errington, J.; Fabret, C.; Perrari, E.
A.Authors: Poulger, D.; Ferlat, C.; Prijte, M.; Pujite, W.; Pulita, M.; Indaled, A.; Henaut, A.; Henaut, A.; Henaut, A.; Liu, Holasppel, S.; Hosono, S.; Hullo, M.F.
A.Authors: Poulger, D.; Henaut, A.; Henaut, A.; Liu, Holasppel, S.; Rosho, B.; Rose, M.; Sadlud, A.; Datadoni, A.; Datadoni, A.; Datadoni, A.; Datadoni, A.; Datadoni, A.; Datadoni, A.; Taradoshi, A.; Taradoni, J.; Sekvaka, A.; Detale, A.; Taradoshi, A.; 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2-deoxy-D-gluconate 3-dehydrogenase [imported] - Caulobacter crescentus
C;Species: 20-Apr-2001 #sequence_revision 20-Apr-2001 #text_change 10-May-2001
C;Accession: C87434
R;Nierman, W.C.; Feldblyum, T.V.; Paulsen, I.T.; Nelson, K.E.; Eisen, J.; Heidelberg, J.
B.; Laub, M.T.; DeBoy, R.T.; Dodson, R.J.; Durkin, A.S.; Gwinn, M.L.; Haft, D.H.; Kolon
N, J.; Ermolaeva, M.; White, O.; Salaberg, S.L.; Shapiro, L.; Venter, J.C.; Fraser, C.M.
A;Title: Complete Genome Sequence of Caulobacter crescentus.
A;Reference number: A87249; MUID:21173698; PMID:11259647
A;Accession: C87434
A;Accession: Preliminary
A;Molecule type: DNA
A;Residues: 1-255 <STO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                C, Superfamily: ribitol dehydrogenase; short-chain alcohol dehydrogenase homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A;Cross-references: GB:AE005673; NID:g13422867; PIDN:AAK23471.1; GSPDB:GN00148
C;Genetics:
A;Gene: CC1492
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ..
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 1;
0.039;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      3.7%; Score 10; DB 2;
100.0%; Pred. No. 0.039;
tive 0; Mismatches 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match 3.7%; Score 10; DB Best Local Similarity 100.0%; Pred. No. 0.0 Matches 10; Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            10; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Lirdakseig 20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     17 LITGGASGIG 26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      11 LEGKVALITG 20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local Similarity
```

g ò

ö

Gaps

homology

ô

Gaps

Matches

```
A; Accession: TUZI/>
A; Accession: TUZI/>
A; Accession: TUZI/>
A; Accession: TuZI/>
A; Accession: A; Accession: TuZi/
A; Accession: TuZi/
A; Accession: TuZi/
A; Accession: A; Accession
Briones, M.R.S.; Bueno, M.R.P.; Camargo, A.A.; Camargo, L.E.A.; Carraro, D.M.; Carrer, H. as-Neto, E.; Docena, C.; El-Dorry, H.; Facincani, A.P.; Ferreira, A.J.S. eubmitted to GenBank, June 2000
A,Authors: Ferreira, V.C.A.; Ferro, J.A.; Fraga, J.S.; Franca, S.C.; Franco, M.C.; Frohme A,Authors: M.L.; Kemper, E.L.; Kitejima, J.P.; Kitejima, J.B.; Karamae, E.E.; Ladgrechan, M.B.; Madeira, A.M. B.N.; Matchira, H.P.; Marino, C.L.; Marques, M.V.; Martins, E.A.; Missukuma, A.Y.; Menck, C.F.M.; Miracca, E.C.; Miyaki, C.Y.; F.G.; Nunes, L.R.; Oliveira, M.M.; de Oliveira, M.C.; Palmideri, D.A.; Rodrigues, V.; Rosa, A.J. de M.; de Rosa Jr., V.E.; de Sa, R.G.; Santelli, R.V.; Sawasak, A.J. de M.; de Silva, A.M.; Silva, T.W.N.; da Silva, M.R.; de Silva, A.M.; Silva, T.W.N.; da Silvaira, M.R.; de Silvaira, M.R.; 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          probable alcohol dehydrogenase At2g47130 [imported] - Arabidopsis thaliana NyAlternate names: hypothetical protein F14M4.4 (Species Arabidopsis thaliana (mouse-ear cress) (Species Arabidopsis thaliana (mouse-ear cress) (Species OS-Mar-1999 #sequence-revision OS-Mar-1999 #text_change 16-Feb-2001 (S.Accession: TO2175; B84911 (S. Shea, T. P.; Fujii, C.Y.; Mason, T.M.; Shen, M.; Rontsubmitted to the EMBL Data Library, September 1998 A.Accession: To2175 (A.Accession: T02175) (A.Accession: T02175)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Gene: XF1457
C;Superfamily: ribitol dehydrogenase; short-chain alcohol dehydrogenase homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A;Introns: 5/2
C;Superfamily: ribitol dehydrogenase; short-chain alcohol dehydrogenase homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 13
2021/6
probable alcohol dehydrogenase At2g47120 (imported] - Arabidopsis thaliana
N;Alternate names: hypothetical protein F14M4.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ô
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 245;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 257;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match 3.3%; Score 9; DB 2;
Best Local Similarity 100.0%; Pred. No. 0.42;
Matches 9; Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
3.3%; Score 9; DB 2;
Best Local Similarity 100.0%; Pred. No. 0.41;
Matches 9; Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A;Gene: At2g47130; F14M4.4
A;Map position: 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                18 ITGGASGIG 26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               13 irgdasdig 21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             14 KVALITGGA 22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 C, Genetics
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 11

Barden

C, Species: Xylella fastidiosa
C, Accession: B8260
C, Accession: B8260
C, Accession: B8260
Nature 406, 151-157, 2000
A, Fitle: The genome sequence of the plant pathogen Xylella fastidiosa.
A, Reference number: A82515; MUID:20365717; PMID:10910347
A, Recession: B8260
A, Accession: B8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 10
bphB protein - Comamonas testosteroni (fragment)
c/Species: Comamonas testosteroni (fragment)
c/Species: Comamonas testosteroni
c/Species: Comamonas testosteroni
c/Species: Comamonas testosteroni
c/Species: T7-Dec-1996 #sequence_revision 21-Jan-1997 #text_change 08-Oct-1999
c/Accession: PC4213
R/Sylvestrep, M.; Sirois, M.; Hurtubise, Y.; Bergeron, J.; Ahmad, D.; Shareck, F.; Barria
R/Sylvestrep, M.; Sirois, M.; MulD:97045812; PMID:8890734
A/Accession: PC4213
A/Accession: 
                       Anshen, N.F.; Hughes, B.; Huizar, L.

Nature 408, 816-820, 2000

A,Authors: Hunter, J.L.; Jenkins, J.; Johnson-Hopson, C.; Khan, S.; Khaykin, E.; Kim, C.

C.A.; Li, J.H.; Li, Y.; Lin, X.; Liu, S.X.; Liu, Z.A.; Luros, J.S.; Maiti, R.; Marziali,

C.A.; Li, J.H.; Li, Y.; Lin, X.; Liu, S.X.; Liu, Z.A.; Luros, J.S.; Maiti, R.; Marziali,

R.; Rooney, T.; Rowley, D.; Sakano, H.; Sakano, H.; Southwick, A.M.; Sun, H.; Tallon,

A,Authors: Salzberg, S.L.; Schwartz, J.R.; Shinn, P.; Southwick, A.M.; Sun, H.; Tallon,

Ref. M.; Mu, D.; Yu, G.; Fraser, C.H.; Venter, J.C.; Davis, R.M.

A;Reference and analysis of chromosome 1 of the plant Arabidopsis.

A;Retatus: Pression: F95563

A;Accession: F95563

A;Accession: F95563

A;Residues: 1-285 csTC>

A;Conseire Ferences: GB:AE005173; NID:g10645436; PIDN:AAG21552.1; GSPDB:GN00141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Gene: F19K6.3
A;Map position: 1
C;Superfamily: ribitol dehydrogenase; short-chain alcohol dehydrogenase homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ·.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              .Match
Local Similarity 100.0%; Pred. No. 0.043.
les 10; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local Similarity 100.0%; Pred. No. 0.034;
Matches 9; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            13 GKVALITGGA 22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           20 GKVALITGGA 29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VALITGGAS 23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local S:
Matches 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
```

Gaps

```
CjAccesion: All149
R;Wood, D.W.; Setubal, J.C.; Kaul, R.; Monks, D.; Chen, L.; Wood, G.E.; Chen, Y.; Woo, L erage, G.; Gillet, W.; Grant, C.; Guenthner, D.; Kutyavin, T.; Levy, R.; Li, M.; McClell Karp, P.; Romero, P.; Zhang, S.
Science 294, 2317-2323, 2011
A;Authors: Yoo, H.; Tao, Y.; Biddle, P.; Jung, M.; Krespan, W.; Perry, M.; Gordon-Kamm,
                                        oxoacyl-(acyl-carrier protein) reductase [imported] - Agrobacterium tumefaciens (strai,
                                                                                                                                                                                                                                                                                                           ster, E.W.
Ajitie: The Genome of the Natural Genetic Engineer Agrobacterium tumefaciens C58.
A,Reference number: AB2577; MUID:21608550; PMID:11743193
A,Accession: AI3149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A;Map position: linear chromosome
C;Superfamily: ribitol dehydrogenase; short-chain alcohol dehydrogenase homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Cross-references: GB:AE008689; PIDN:AAL45615.1; PID:g17743336; GSPDB:GN00187
A;Experimental source: strain C58 (Dupont)
                                                                     C;Species: Agrobacterium tumefaciens
C;Date: 11-Jan-2002 #sequence_revision 11-Jan-2002 #text_change 18-Nov-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
3.3%; Score 9; DB 2
Best Local Similarity. 100.0%; Pred. No. 0.4
Matches 9; Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Search completed: October 23, 2003, 13:05:55 Job time : 85 secs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   18 ITGGASGIG 26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            14 iTGGASGIG 22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A, Residues: 1-259 < KUR>
                                                                                                                                                                                                                                                                                                                                                                                                                                   A;Status: preliminary A;Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  q
C;Species: Arabidopsis thaliana (mouse-ear cress)
C;Date: 05-Mar-1999 #sequence_revision 05-Mar-1999 #text_change 16-Feb-2001
C;Accession: T02176; C84911
R;Rounsley, S.D.; Lin, X.; Kaul, S.; Shea, T.P.; Fujii, C.Y.; Mason, T.M.; Shen, M.; Ron submitted to the EMBL Data Library, September 1998
A;Description: Arabidopsis thaliana chromosome II BAC F14M4 genomic sequence.
                                                                                                                                                                                                                                                                                                  A;Residues: 1-258 <ROU>
A;Cross-references: EMBL:AC004411; NID:g3522932; PID:g3522936
A;Cross-references: EMBL:AC004411; NID:g3522932; PID:g3522936
A;Experimental source: cultivar Columbia
R;En, X.; Raul; S.; Rounsley, S.D.; Shea, T.P.; Benito, M.I.; Town, C.D.; Fujii, C.Y.;
M.; Koo, H.; Moffat, K.S.; Cronin, L.A.; Shea, T.P.; Benito, M.I.; Town, C.D.; Fujii, C.Y.;
euss, D.; Nierman, W.C.; White, O.; Eisen, J.A.; Salzberg, S.L.; Fraser, C.M.; Venter, J.
Nature 402, 761-768, 1999
A;Title: Sequence and analysis of chromosome 2 of the plant Arabidopsis thaliana.
A;Reference number: A84420; WUID:20083487; PMID:10617197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 14
H75616
Oxidoreductase, short-chain dehydrogenase/reductase family - Deinococcus radiodurans (st
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      C;Species: Deinococcus radiodurans
C;Species: O3-Dec-1999 #sequence_revision 03-Dec-1999 #text_change 17-Mar-2000
C;Accession: H75616
R;White, O.; Eisen, J.A.; Heidelberg, J.F.; Hickey, E.K.; Peterson, J.D.; Dodson, R.J.;
M.; Shen, M.; Vamathevan, J.J.; Lam, P.; McDonald, L.; Utterback, T.; Zalewski, C.; Ma Science 286, 1571-1577, 1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A;Cross-references: GB:AE001862; GB:AE001825; NID:96460468; PIDN:AAF12180.1; PID:964604:
A;Experimental source: strain R1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Science 286, 1571-1577, 1999
A;Title: Genome sequence of the radioresistant bacterium Deinococcus radiodurans R1.
A;Reference number: A75250; MUID:20036896; PMID:10567266
A;Accession: H75616
A;Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        C; Superfamily: ribitol dehydrogenase; short-chain alcohol dehydrogenase homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         C; Superfamily: ribitol dehydrogenase; short-chain alcohol dehydrogenase homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A;Residues: 1-258 <STO>
A;Cross-references: GB:AE002093; NID:g3522936; PIDN:AAC34218.1; GSPDB:GN00139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 258;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 258;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       3.3%; Score 9; DB 2;
100.0%; Pred. No. 0.42;
tive 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 9; DB 2;
Pred. No. 0.42;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3.3%; Scor.
100.0%; Pred. No. v....
0, Mismatches
                                                                                                                                                                                                                                         A;Status: translated from GB/EMBL/DDBJA;Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Local Similarity 100.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A,Gene: At2g47120; F14M4.5
A,Map position: 2
A,Introns: 5/2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     18 ITGGASGIG 26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  irgassis 21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               13 GKVALITGG 21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A;Molecule type: DNA
A;Residues: 1-258 <WHI>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Best Loc
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
```

RESULT 15

ö

ö

0; Indels

DB 2; . 0.43;

034864 bacillus su P48638 anabaena s Q828e5 salmonella s Q07121 arthrobacte Q07123 arthrobacte Q82qw2 salmonella P32350 saccharomyy P15877 escherichie Q13099 homo sapier		P06353 Nordeum Vul Q9eq21 mus musculu Q51483 pseudomonas P49390 brassica na	P34/01 balmonella Q941j9 pyrococcus P290j9 black beetl Q9cmu9 pasteurella Q9sci9 rickettsia	OBGOM4 methanosarc OBtkx4 methanosarc OBu0n0 pyrococcus	082Cp5 yersinia pe Q04558 lelystad vi O59297 pyrococcus P55958 parietatia	Posto pariecatia OO4403 pariecaria P11105 medicago sa P59169 arabidopsis	P45388 pseudomonas P73795 synechocyst P04237 tragelaphus P01967 bos mutus g	901968 bos mutus gotsn8 bub gotsn8 bub gotsn8 bub alls bub	biso biso bos	P01966 Dos taurus P79057 schizosacch Q9he74 neurospora		P57464 buchnera ap P15240 bacteriopha P00802 stabhylococ	HH	Q50234 methylophil P59126 synechococc O55143 synechocyst	Q98166 wollow B	P80239 Macmophilias P80239 bacillus su P37984 erwinia chr	agrobact yersinia	schizosa brassica	yersinia p t putative	083604 treponema p P38243 saccharomyc Q9csb4 mus musculu
YOAB BACSU   GSHR_ANASP   GSHR_ANASP   ATKB SALTI   AMOI_ARTSI   AMOZ_ARTSI   AMOZ_ARTSI   AMOZ_ARTSI   MOZ_SCLI   DHG ECOLI   TG37   UMAN   VDD-UTMAN	PDGI_ARATH						1 YAEJ PSEPU 1 YB47 SYNY3 1 HBA TRAST 1 HBAT BOSMU									I AHPC BACSU SYFB ERWCH		L FABG_BRANA		YBSI PA3I
4 4 7 7 8 8 8 9 7 7 8 9 9 9 9 9 9 9 9 9 9 9										1 1 1 1 1 4 4 1 1 4 4 1 1 4 4 1 1 1 1 1										
00000000000000000000000000000000000000																				
4 C C C C C C C C C C C C C C C C C C C	4 4 4 4 4 1	50 51 52 53 53		59	66 6 6 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	66 67 68	69 70 71 72 73	2 4 7 7 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	77 78 78 79 99	8888	0 CO CO	86	0 8 8 6	91	, ov o	96 96 76	866	101	102	105
n 5.1.6 Compugen Ltd.  Search time 23 Seconds (without alignments)	OAXO	0	parameters: 127863		hy chance to hav	<pre>pressure at the result being printed, total score distribution.</pre>	Description	P50198 pseudomonas P39640 bacillus su 002691 bos taurus	046381 C cis-2,3-d P80873 bacillus su P40747 bacillus su	005528 erwinia chr P37079 klebsiella P08694 p cie-2,3-d	P72220 p cis-2,3-d P72220 p cis-2,3-d P48639 burkholderi	O14388 schizosacch P49672 ascaris suu O09254 caenorhabdi		Q9Kqh7 vibrio chol Q03798 saccharomyc O70351 rattus norv		COCOMO SIEWANELIA Q12634 magnaporthe P32573 saccharomyc	ದ್ಗದ	caenorhabd escherichi	952 v	O45583 Caenorhadol Q9vmw9 drosophila P34113 dictyosteli

ο.
ВÞ
н
•
0
മ
•••
ન
ᅼ
0
•
N
ï
ġ
œ
ä
g
m
~
:-
•
1
σ
0
ī
ġ
ä
;

P50166 candida tro P53068 saccharomyc O8pwk6 xanthomonas O8pw8 xanthomonas O8pw3 xanthomonas O8p326 streptomyce O03326 streptomyce O05834 mycobacteri P53310 streptomyce P5431 belicobacte P5431
ARDH CANTR AP10, YEAST YEAST YETAL OXIR STRLI OXIR STRL
0.00000000000000000000000000000000000
<b>୰</b> ᲑᲡ ᲔᲑᲡ ᲐᲑᲡ ᲐᲑᲡ ᲐᲑᲡ ᲐᲑᲡ ᲐᲑᲡ ᲐᲑᲡ ᲐᲑᲡ ᲐᲑᲡ ᲐᲑᲡ Ა
11111111111111111111111111111111111111
042785 colletotric 0498404 methanococc 049765 mycobacteri 050765 mycobacteri 050228 dresophila 091413 methanococc 052228 dresophila 091413 ricketteia 091413 mycobacteri 0984317 methanococc 0884317 methanococc 0884317 methanococc 0884318 porphyra pu 097461 synechocyst 098424 hiberibacte 098425 ricketteia 098425 ricketteia 098426 buchnera ap 098426 cherrichia 081418 almonalia 081418 almon
214 1 RASL_COLTR 215 1 LEXA_MYCLE 217 1 LEXA_MYCLE 218 1 ELAI_MYCTU 220 1 Y231 RTPW 220 1 Y231 RTPW 220 1 Y231 RTPW 221 1 RL1 LIBAS 221 1 RL1 BUCAP 222 1 RAPB DROWE 223 1 RL1 BUCAP 233 1 RL1 BUCAP 234 1 RL1 BUCAP 244 1 RAPE DROWE 245 1 RK1 BUCAP 247 1 RK1 BUCAP 248 1 RK1 BUCAP 249 1 RK1 BUCAP 240 1 RK1 BUCAP 241 1 RK1 BUCAP 241 1 RK1 BUCAP 242 1 RK1 BUCAP 243 1 RK1 BUCAP 244 1 RABG THEMA 245 1 RCAS SYNY3 247 1 RK1 BUCAP 248 1 RCAS SYNY3 249 1 RCAS SYNY3 240 1 RCAS SYNY3 241 1 RK1 BUCAP 251 1 RX1 BUCAP 252 1 RABG THEMA 253 1 RCAS SYNY3 264 1 RCAS SYNY3 265 1 RCAS SYNY3 267 1 RCAS SYNY3 268 1 RCAS SYNY3 269 1 RCAS SYNY3 260 1 RTH PYRRU 261 1 RCAS SYNY3 262 1 RCAS SYNY3 263 1 RCAS SYNY3 264 1 RCAS SYNY3 265 1 RCAS SYNY3 266 1 RTH PREAD 267 1 RCAS SYNY3 268 1 RCAS SYNY3 269 1 RCAS SYNY3 260 1 RTH PREAD 260 1 RTH PREAD 261 1 RCAS SYNY3 262 1 RCAS SYNY3 263 1 RCAS SYNY3 264 1 RCAS SYNY3 265 1 RCAS SYNY3 266 1 RTH PREAD 277 1 RCAS SYNY3 278 1 RRF RASH 278 1 RRF RASH 278 1 RRF RASH 279 1 RRF RASH 271 1 RCAS SYNY3 271 1 RTH RRF RASH 271 1 RCAS SYNY3 272 1 RCAS SYNY3 273 1 RRF RRF RASH 274 1 RCAS SYNY3 275 1 RCAS SYNY3 277 1 RCAS SYNY3 277 1 RCAS SYNY3 277 1 RCAS SYNY3 278 1 RRF RASH 277 1 RCAS SYNY3 278 1 RRF RASH 277 1 RCAS SYNY3 278 1 RCAS SYNY3 277 1 RCAS SYNY3 278 1 RCAS SYNY3 278 1 RCAS SYNY3 277 1 RCAS SYNY3 277 1 RCAS SYNY3 278 1 RCAS SYNY3 277 1 RCAS SYNY3 278 1
Ø Ø Ø Ø Ø Ø Ø Ø Ø Ø Ø Ø Ø Ø Ø Ø Ø

P57909 pasteurella Q9pre2 ureaplasma P7327 escherichia P41930 saccharomyc	வ エ	Q6/4/3 trog virus Q91qz8 rana tigrin		bacillu	P78965 schizosacch P33522 brassica na	blastocla		Q50539 mechanosarc Q57007 haemophilus	Q8uby9 agrobacteri	Q98efl rhizobium l Q92176 rhizobium m		Q9a0m0 streptococc		homo sapie	mus mu	P14218 nseudomonas	P46451 haemophilus	P31072 trypanosoma	P46104 streptomyce	P44963 haemophilus	Q01781 petroselinu	P30651 caenorhabdı O9yb80 aeropyrum p	Q10301 schizosacch	oryz	homo sapie	bacillus s	P42255 aspergillus P05155 homo sanien	Ogfuj3 arabidopsis	Q9r1]4 rattus norv p81177 stanhvlococ	P41161 homo sapien	P16878 xenopus lae	euglena g	P30837 homo sapien	Q07862 human papil	arabidopsi	Ostujz arabiuopsis Oskewo bacillus ha	hordeum	P54145 caenorhabdi Ootfong see masse (m	DBec		P41555 yarrowia li 048796 oenococcii	saccharom	schizosa	Olssie candida alb O87109 vibrio para	archae	Q9wz56 thermotoga	aquifex	bacillus
ARLY PASMU DNAA_UREPA PROY_ECOLI SSU1_YEAST NU4M_CROLA	GPI3 Y514		SIL9 VGL		GSHR CRU4	MPPB	SIL7	YB07 HAEIN		LEU2												GATA AERPE						CK	MYOC RAT			YC82_EUGGR		VL2 F	CKX3		MIO	. AMT1 CAEEL	ARS		ACE/	DALE	YC9D	PYRG_VIBPA	ILVD		ILVD AOUAE	
457 1 457 1 457 1 458 1																																																
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			•						•			•			•			•						•					•		•		•								•	٠.	•			•		•
ουουο	v v v	o	ωw	ω.	o c	ω	<b>ب</b> م	oφ	9	ωv	φ	ψv	ovo	·vo	vo v	o vo	ω	9	y y	ovo	ω·	യ യ	· w	<b>w</b> w	oω	ω (	oν	o vo 1	o u	œ	· ·	οo	<b>6</b> 4	ဖ	ω·	o vo	·vo	· ω	o vo	· w	ww	ω	9	oυ	o vo	ωų	oνo	· u
326 327 328 329 330	331	333 334	335	337	338	340	341	342 343	344	345 346	347	348	350	351	352	354	355	356	357	320	360	361 362	363	364	366	367	368	370	371	373	374	376	377	379	380	387 382	383	384	386	387	388	390	391	392	394	395	397	α ο ο ο
P50525 schizosacch P12441 influenza b P55431 rhizobium s P53778 homo sapien P81294 juniperus a	Q9kxr7 streptomyce Q53915 streptomyce	033558 rhodobacter Q8ngal corynebacte	O9pom6 homo sapien O60547 homo sapien	P18632 cryptomeria	P26183 cryptospori O8ftc6 corvnebacte	P38127 saccharomyc	P46080 anabaena sp	P19333 torpedo cal P07789 bacillus su	P31005 bacillus me	P49833 odontella s P73532 synechocyst	Q01459 homo sapien	Q9uSn1 manduca sex	P15587 streptomyce	020252 spinacia ol	Q27181 paramecium	Qaloba streptomyce P24300 streptomyce	P04165 zea mays (m	P50910 streptomyce	Q91558 streptomyce	Q9zzt8 pisum sativ	P29757 solanum tub	P05718 vicia faba P42792 arabidopsis	P37030 bradyrhizob	P09843 oenothera b	P14833 oryza sativ	094837 daucus caro	P07747 triticum ae P17560 sus scrofa	Q09780 schizosacch	Q58860 methanococc	P47693 mycoplasma	Q53598 streptococc	Q9him0 thermoplasm	P17630 sus scrofa	P49424 pseudomonas	P13266 escherichia	PS1607 rattus norv	Q9ruv5 deinococcus	Q970nl sulfolobus	Ogrofi nomo sapiem	Q98306 ruminococcu	P54084 thiobacillu P44165 haemonhilus	Q9v7n5 drosophila	042490 petromyzon	OU8325 Dacillus me P75584 mvcoblasma	ЪĹ	ع تة		5 0
2 366 1 APN1_SCHPO 2 366 1 HEMA_INBID 366 1 NOLL_RHISN 2 367 1 MK12_HUMAN 2 367 1 MPA1_UUNAS	368 1 368 1	369 1 370 1	371 1 372 1	374 1	376 1	377 1	378 1	380 1	380 1	380 1	385 1	385	386 1	387 1	387 1	387 1	388 1	388 1	388 1	392 1	392	392 393 1	393 1	394 1	397 1	398 1	398 402	404	405 405 1	407 1	413 1	414 1	416 1	419 1	1 614	419 1	425 1	431 1 TRB	438 1 MNT	438 1	439 441	442 1	444	445 1 AYLL	447 1 GNT	453 1 YEGO	455 1 1282	456 1 0000
00000 00000	, vi v	, v,	9, 0	· 67	, v	8	νi τ		۲, د.	o, 0,	i	٠i ر		8	۰. د	, c	i ~i	α,			ų,	N N	8	0, U		9.0	7 0	, vi			o, c	i	ب د		6, 6	. v	κ.	oi c		6	N N		oi o	, v,	100	, i	, v	

ο.
g
44
н
9
ρì
-ન
ユ
O
•
Ŋ
Ţ
ď
œ
Н
σ
-
3
7
9
- 1
σ
0
1
Ø
ž

P47350 mycoplasma P8529 mycoplasma P8529 mycoplasma P83099 lactobacill P673099 lactobacill P673099 lactobacill P673099 lactobacill P673099 lactobacill P67629 drosophila P57629 drosophila P57629 drosophila P57629 drosophila G910927 cattus norv P67319 mus musculu P678437 mus musculu P678437 mus musculu P678437 mus musculu P678437 mus musculu P67844 syncethocyst G99027 cattus norv P67845 mus musculu P67845 mus musculu P67845 mus musculu P67845 pacifica P67845 mus musculu G61033 homo sapien P67847 dlycine max O75420 homo sapien P67847 dlycine cattus p73617 mus musculu G68087 gallus gall P6787 dlycine max O759052 equine homo sapien P6787 dlycine max O759052 mus musculu O759052 mus musculu O759052 candida alb P10827 decosophia Decosophi
RNR MYCGE GSSHI MYCPU GGSSHI WYCPU GGSSHI WYCPU GGSSHI WYCPU GGSSHI WYCPU BYRYI GHYCK PRXI HUMAN WYCTU CLIPB WYCTU CLIPB WYCTU CLIPB WYCTU CLIPB HYGH MYCTU CRIB HUMAN WYCTU CRIB HUMAN WYCTU CRIB HYGH MYCTU CRIB HYGH MYCT CRIB HYGH MYCT CRIB HYGH MYCT CRIB HYGH MYCT
.  CVC/CVC/CVC/CVC/CVC/CVC/CVC/CVC/CVC/CV
( 444444444444444444444444444444444444
·
P56008 helicobacte 04802 saccharomyc 067868 aquitex aeo 09y988 aquitex aeo 09y988 aquitex aeo 09y988 aquitex aeo 147609 mycoplasma 096yk0 mycoplasma 096yk0 mycoplasma 090y60 mycoplasma 090y60 mycoplasma 090y60 influenza b 090y66 influenza b 0000y66 influenza b 000000000000000000000000000000000000
RS1_HELPY SYDC_YEAST CAB1_AOUAE ILUUD_ARREPE ILUUD_BACGU Y1369_MYCGE Y1369_MYCGE Y1369_MYCGE YNATA_METAA INBUD HEMA_INBUD HEMA_INBUS GOXI_HAMI SILL_PANTR BRLI_EBV ALUCA COXI_HAMI SILL_PANTR BRLI_EBV ALUCA COXI_HAMI SILL_PANTR BRLI_EBV ALUCA ALUCA ALUCA GUMS_MYCGE FERP_MYCGE FERP_MYCCE
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
40000000000000000000000000000000000000

P12845 caenorhabdi P12845 caenorhabdi P05661 drosophila P12844 caenorhabdi Q96e13 gallus gall Q66802 ebola virus	homo homo homo d ger	d genome d genome d genome d genome	homo dugbe homo bacil	P40803 Dacillus su P04114 homo sapien Q96pk2 homo sapien P80701 pseudomonas	Q45827 chloroflexu P04842 pichia past P27386 bacteriopha	P80100 ectothiorho P80101 ectothiorho O83333 treponema p	Q9v201 pyrococcus Q8tzi3 pyrococcus O74105 pyrococcus	P40641 alligator m P37770 escherichia P37771 salmonella	Q31721 brassica to P80097 lactobacill P31534 lampetra pl	P10130 mycoplasma P17356 vaccinia vi P29306 zea mays (m	sus scrota bacterioph hyphantria	Q9nda6 conus texti P58786 conus radia O76821 acarus siro	P81565 phyllomedus Q9rn09 bacillus an	P32081 bacillus su P13544 gallus gall	P19031 feline immu P36533 saccharomyc P13305 bacteriopha	O83546 treponema p Q8xvk0 ralstonia s	006721 bacillus su	chiamyui sus scro bacterio		P32281 bacteriopha P55482 rhizobium s	Q9pmrO campylobact Q89ubO bradyrhizob p80922 oceanosniri	P24807 mus musculu
MYSD CAEEL MYSA DROME MYSA DROME MYSA CAEEL MYSB CAEEL BA2B CHICK RRPL EBOSM POLN ONNVG	TLN2 HUMAN FLINA HUMAN CHD5 HUMAN AHNK HUMAN POLG_DEN2P	POLG DEN26 POLG DEN27 POLG DEN27 POLG DEN20	LYST HUMAN RRPL DUGBV FATZ HUMAN PKSL BACSU	PKSK_BACSU APB_HUMAN MAC4_HUMAN DIDH_PSESP	YMDB_CHLAU ALOX_PICPA YPI_BPRD	LHA1_ECTHA LHA2_ECTHA Y311_TREPA	RPOP_PYRAB RPOP_PYRFU RPOP_PYRHO	AMA1_ALLMI YHFG_ECOLI YHFG_SALTY	ATP6_BRATO SAKA_LACSK HMEN_LAMPL	RS14_MYCCA YHO5_VACCV 143X_MAIZE	SUIS_PIG Y12D_BPT4 CE3G_HYPCU	COW3_CONTE COW_CONRA FABP_ACASI	PHYB PHYBI YQ23 BACAN	CSPB_BACSU HM1_CHICK	YOR3 FIVSD RM39 YEAST YOSO BPT4	YS35 TREPA YS30 RALSO	BB13 SCHCO GEPA BACSU	PEPC PIG CIM BPMU	HOLT BPDP1 UL11 HSVEB	Y11B_BPT4 Y4HR_RHISN	YD97 CAMJE RL31 BRAJA ACP OCELI	CD24_MOUSE
1938 19947 1966 1966 12210 1210 14	542 647 713 388	3391	8801 036 424 17	938 1583																		
	, , , , , ,	44444	, i i i i i	7 7 7 7	بنبن	äää	444	444	ਜਜਜ	<u>ب</u> نبن	i i i	444	جنب	i	خ جا جا	ا جا جا ،	-i -i -	ن با با	أجأجأ	٠٠٠.		-i -i
618 619 621 622 623 623	626 627 629 630	69 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	633 633 633 633 633 633 633 633 633 633	6 4 4 0 6 4 1 6 4 1	643 644 645	646 647 648	649 650 651	652 653 654	655 656 657	659 659 660	661 662 663	664 665 666	667 668 669	670 671	672 673 674	675 676 676	678	6 6 8 0 6 8 1	682 683	684 685	686 687	689 689
046674 c sarcoplas 000779 f sarcoplas 00079 f sarcoplas 09631 black beetl 066929 flock house P18596 rattus norv 026066 helicobacte 09514 homo sapien	P18185 Dacillus su Q10309 schizoacch Q71121 rhesus cyto Q64518 mus musculu P76398 escherichia	003669 g sarcoplas P42835 saccharomyc P16615 h sarcoplas	P20647 o sarcopias O9yg19 gallus gall P11507 r sarcopias	008336 bacillus su 050302 bacillus st P46537 bacillus ca P25197 rhizobium m	Q54873 streptococc Q8xhb3 clostridium P25994 bacillus su	P09436 saccharomyc Q13393 homo sapien P59448 buchnera ap	P34339 caenorhabdî P20676 saccharomyc 003043 drosophila	Q9wz27 thermotoga P29616 gallus gall O13395 ustilago ma	Q09798 schizosacch P32644 saccharomyc P15594 trypanosoma	Q8cg48 mus musculu P54159 bacillus su O95347 homo sapien	P50533 xenopus lae O60315 homo sapien Q9r0g7 mus musculu	Q27954 bos taurus Q08582 sulfolobus P48120 cyanophora	Q12451 saccharomyc P24348 caenorhabdi	Q9c0al homo sapien Q09773 schizosacch	014191 homo sapien 093530 xenopus lae 064535 rattus norv	P40477 saccharomyc Q64446 mus musculu	QONES EMPLYA GOSS QUOGSI EMERICALIA	00.703 aquites acc Q9x6y2 aquifex pyr 015648 h beroxisom	Q920r6 mus musculu Q90243 acipenser t	Q9nzm3 homo sapien P28668 drosophila	Qutek3 homo sapien QUIS50 xenopus lae	P10039 gallus gall
17 1 ATAZ CANFA 18 1 ATAZ FELCA 18 1 RRPO BBV 19 1 ATA3 RAT 19 1 MFD HELPY 17 1 CHCZ HUMAN 19 1 ODO1_YEAST								099 1 102 1 103 1						427 1								808 1
9999 9999 1001 1001	22222		,	1777	äää	ÄÄÄ	224		ਜਜਜ	ਜਜਜ	777	222	AAA	ı 	ààà	ää,	4 24 2	7 7 7	1 0	17		4 ~

apil teli cter acte	pien m m	culu	pren us a	pien	pacteri	rue	cill	2202	dolg _'	E) 12	S B B B B B B B B B B B B B B B B B B B	sma	giob	ence	opha	teri	dium	spor	opha	chia	gall	cter	gall	Za a	la p	lasm	s mu	um h	pien	agus	pien	teri	omyc	a vi	T EX	chia	chia	IIa Alah	Ofa	cule	sma	18 8t	a De	onas	culu	Ceri	rium	opha	sia	sarc	Sarc
dictyosteli acetobacter helicobacte	homo sapien	mus musculu	nomo sapien phaseolus a	nomo sa	mycobacteri	os tau	lactobacill	trepto	rchaeo	zea mays	ureaplasma	ıreapla	rchaeo	eline	bacteriopha	grobac	lostri	ממוושויי	acteri	scheri	allus	hodoba	gallus gall	nfluen	chlorella p	hermop	hizobi	gossypium l	nomo sa	oryctolagus	homo sapien	halobacter	saccharomy	vaccinia	נון [וחבנו	scheri	escherichia	almone	sus scrofs	rana es	mycopla	oacılın anidi	rersini	6	mus mus	mycobacter saccharomy	eubacterium	bacteriopha	rickettsla azospirill	methanosar	methanosa
P50782 n P15649 d Q8gbd3 a Q9zj67 h	01040 H	70399 #	32292 1	05114 F	50718 m	02316 k	26931]	55053 E	28520 8	11646 2	56557 1	17274 U	29102 a	33465 I	17/16 9t1t3 b	52514 a	97eh7 c	7 25221	38795 E	22522 e	28317 9	30723 1	20763 9	26143 1	29381 E	97cgl t	55425 r	31336	50397 F	01839 0	01834 F	48331 P			SKOTO 1	8x6z5 e	09390 e	Bxtc6 E	01315 8	02617 1	75209 n	30540 1	Bzii3	52112 F	55038						8pvf1 n
2500	2 2	, ia, i	7, 27	2 6	öö	<u>~</u> ~	<u> </u>	ö	86	ī č	źö	2	88	7, 5	; 6	Ö	Ö	ם גם	, A	P	2	3 6	. Z	2 6	3 6	ö	מ' כ	5 2	ŏ	ă, ă	Ä	ŏŏ	ji Ei,	2 6	ÖÖ	ŏ	2.	ŏò	3 2	. <u>.</u>	Δì	a, č	öö	Ä	öö	ăč	. 2	ŭ č	á ič	ŏ	ŏ
, O.S.	36	9 19 1	3 9	33	12	Z	ž H	ı,	Ð	B :) A	民	Ð. S		S	Ð	99	2.	. 0	: 4	X	A H		Q	X	0	ZZ	N II	3	<u>.</u>	7	S 8	£ E.	20	3 5	57	н	<u> </u>		SS	No.	E e	Ę E	E	E :	2 5	: 0	8	H H	ú	\$
VE/ HFV24 7E DICDI CHIO ACEAC YF51 HELPJ	ra_HUM/	P531 MOUSE	26 HUM	HG14 HUMAN	7 MYC	14_BOV]	33 LACE	33_STR	74_ARCE	LC MAL	33 URE	33_URE	F ARCE	57 CV#1	S BPAE	FB_AGR7	O CLO	TO PLA	S BPD1	AV ECOI	T_CHIC	S2 RHOC	CHIC	AM IAC	K2_CHLI	rF_THE	SB RHIS	3X GOSI	WUH_S/	CB RAB	HUMA	F HAL	17-YEAS	EB_VAC	VE11 RACHD	PE_ECO	PE_ECOI	PE SAL	S PIG	VB RANI	88 MYCI	LB BAC	PE YER	GLPM_PSEAE	13 MOUS	A WEAS	THIO EUBAC	AD_LAM	Y484 RICPR	41_MET	A1_MET
1 CHI																																																			
0000	8 6 6 6	9 6	3 O	66	9 0	100	000	100	100	101	101	101	101	101	101	102	102	707	102	103	103	103	103	103	103	104	104	105	106	106	106	106	106	106	107	108	108	108	108	108	108	108	109	109	109	109	110	110	110	111	111
 																													•	•				•			•	•			•				•				•		
വഹസന	n n) LC I	υru	ıΩι	n n	ıΩι	nυ	ß	ហ	n u	nω	ιn	ın ı	n u	n m	'n	ın ı	nυ	n La	'n	Ŋ	n n	'n	ın ı	υLΩ	ហ	ហេម	റ ഗ	Ŋ	υu	ហ	ហេរ	വ	r.	υu	വ	Ŋ	ហេ	n n	'n	ហ	ហ	n u	ı m	ហ	n u	n IO	ωı	n u	ഹ	Ŋ
765 765 767	88	20	77	73	75.4	92	7.8	79	80	81	83	84	92	980	20 0	89	060	T 0	N 60	94	95	96	86	600	01	02	03	# SO	90	07	60	010	17	13	4 t	16	17	8 6	20	21	22	23	4 C	26	27	9 0	30	31	2 .	34	35
777		. 7 .	7 1	- 1	· i-	i i	- i-	7	7	7.7	7,7	7	ři		7.7	7	- 1			7	7		7			ão	ā, ā	ōō	æ	ão a	ō	co d	0 00	60	no o	i co	80	ao c	no co	iòò	80	œ ċ	o oc	òò	à	aciα	òòò	80 (ά	660	80
									_	_				_	_														_							•															_
. La las um	ir.	88	E C	Ē	t e	te	4 6 7	is	mn.	88	ກິດ ຮັບ	1.3	O .	ha	r.i	g	ıia	9	٠ - ۲	De	ri	n c	0 P	ķ	e i	E	55.	ı i	an.	pr	י ה מיק	ılu	ri	ц	las	0 0	D C	iia	าเล	i D	es.	iri.	116	. ve	er	me en	ri	Q,	au Su	2 2	ies
pasteurella pseudomonas pseudomonas clostridium	ian va	thomon	Tobacul	orobiu	icobac	icobac	nornac no sabi	bidops	stridi	licago	terror	bidops	hanocc	terior	obacte	haeogl	herich	naeog1	alonia	nan her	obacte	ıria es	eptomy	yurus	ro sapi	sseria	hanocc	therich	mophil	relia	luenza	muscu	acteriopha vcobacteri	sophil	eudomonas	folobu	methanococc	herich	sostian	hanocc	rospor	obacte	obacte didatu	felis silve	odobact	icella o gani	obacte	ponema	illus	charon	lcaligenes
tas par 139 pse 923 pse ndl clo	546 Bin	zil xar	tuo pyr	167 chl	nbs hel	188 hel	311 cae	221 are	310 clc	715 med	379 bac	389 are	373 met	191 bac	160 ha]	342 arc	132 esc	748 arc	ומה אמן	439 hun	288 myc	109 ala	548 St1	120 das	rx3 non	yme nei	583 met	177 esc	740 hae	744 bor	471 inf	224 mus	1 p4 Dac	luo dro	Ö, Ö	217 su]	374 met	231 esc	17. esc	520 met	762 net	786 myc	ביה 4מי	557 fe]	030 rhc	et3 bru	231 myc	734 tre	199 bac	449 sac	581 alc
090503 054439 P80923 Q97hd1	0045	0967	082t	046	200	025	O1 /2 P25(082	0083	P24	7 7 7	P38.	090	PIY	P33	029	P46	8 6 6	900	P24	005	P001	P01	P074	080	0930	0576	P36.	P43.	051	P03	P40	050	V60	P19	P46	090	P76.	100 100 100	0586	P34	049	2 2 2	062	P42(OBY	064	083	P544	P81	044
TATA_PASMU ACP1_PSEAE ACP_PSESM EX7S_CLOAB	SVVD	ANAL	YRAE	CHLTE	HELPJ	HELPY	CAEEL	ARATH	CLOAB	MEDSA	BACSU	ARATH	METJA	BPCHP	HALNI	ARCFU	ECOLI	ARCFU	PETFA	HSV6U	BPML5	ALAES	STRCZ	ASVI	CORGI	NEIMA	METUA	ECOLI	HAEIN	BORBU	IAMEI	MOUSE	MYCTU	DROME	PSESP	SULAC	METJA	ECOLI	MESVI	METUA	NEUCR	MYCLE	CANTO	FELCA	RHOCA	BRUME	BPMD2	TREPA	BACSU	YEAST	ALCXX
7 P P P P P P P P P P P P P P P P P P P	TEGP	ACP_X	RLX P	CSMA	TATA	TATA	CD24	RUXG	ATPL	RUXG	CSGA	S61B	¥070	79KG	GVG2	Y405	YCIN	YF24	ייט מיני מיני מיני	UL91	VG73	CACG	ANSA	HBB	RSSO	RS20	Y230	XHCN	RPOZ	RS15	NRAM	SDF1	YF19	BAFL	MAMO	RPOL	Y071	YEAC	RK23	XC23	CONE	HIS2	2018	SDF1	ANDH	THFB	VG41	Y753	YOGV	ATPJ	NCCY
AC AC						н.																																										Н.	Ч-		
аааа						79	ر ا ا	80	ω.	œι	D W		ω.	w	~ ~																								,, 0	, 01	σ	o c	ח פ	93	93	4 2	, 6 , 4	94	94 1	9 5	95
76 77 77 11 77 11	77	78	78	79	v 6												00		ņα	. 60	80	ω a		ω,	. a	60	ω, α	0 00	80	ص a	. 60	ω,	0.00	80	σ. α																
1.8 76 1 1.8 77 1 1.8 77 1	1.8 77	1.8 78	1.8 78	1.8 79	1.8 79	8.0	20 00 H H	. 60	1.8	6.0	æ. e.	1.8	1.8	œ. c	0 00 	1.8	۲,	.i ,	-i	;	т.	.i.	i ii	۲,	H -	i -i	, ,		٦.	H	ij	٠.		-i	.i .	. 6	1.8	9.1.	æ. eo ⊣ ⊢		1.8	8.6	ο α • -	 	1.8	œ. c	7 F. 0	1.8	ص. ص. م	 	1.8
5 1.8 76 1 TA 5 1.8 77 1 AC 5 1.8 77 1 AC 5 1.8 77 1 EX	1.8 77	1.8 78	1.8 78	1.8 79	1.8 79	8.0	20 00 H H	. 60	1.8	6.0	æ. e.	1.8	1.8	œ. c	0 00 	1.8	۲,	.i ,	-i	;	т.	.i.	i ii	۲,	H -	i -i	, ,		٦.	H	ij	٠.		-i	.i .	. 6	1.8	9.1.	æ. eo ⊣ ⊢	 	1.8	8.6	ο α • -	 	1.8	œ. c	7 F. 0	1.8	ص. ص. م	 	1.8

_
Ω
m
rsp
_
9
O
ā
oli
ス
v
•
2
ï
88
œ
Н
on.
•
÷
673-
o
1
9
=
·
•
r B
ゴ
_

		QBuij2 agrobacteri P29580 methanobact P29581 methanobact P41803 phytophthor P41804 phytophthor	P59372 mycoplasma Qbiccl fowlpox vir P77415 escherichia Q58918 methanococc Q9hpj8 halobacteri		Ostuds Dotterla bu QBtid4 methanosarc QBpyn2 methanosarc Q90986 gallus gall P41985 bos taurus Q900t2 equus cabal	P55396 rhizobium e P21078 vaccinia vi 026075 helicobacte P76545 escherichia		Ogv6y3 drosophila P42631 escherichia P21051 vaccinia vi P33822 variola vir Q8kaa4 chlorobium Q9pq69 ureaplasma	caenorhab aspergill buchnera pasteurel vibrio ch vibrio pa vibrio pa		P40684 serratia ma P40282 plasmodium P19931 escherichia
221 1 1 2 2 1 1 2 2 1 1 1 2 2 1 1 1 1 1		23222 23322	23 1 23 1 24 1 24 1 24 1 24 1 24 1 24 1							130 1 YB12 MYCEN 130 1 YB12 MYCEN 130 1 YBES AQUAE 131 1 1113 MOUSE 131 1 1113 MAT 131 1 RSB TALSO 131 1 SSB TALSO 131 1 STP2 BOUIN 131 1 ZPA RAT 131 1 ZPA RAT	
	नंतंतंतं	ਜੋਜੋਜੋਜੋ	ਜ਼ਜ਼ਜ਼ਜ਼ਜ਼		ਜ਼ਿਜ਼ਜ਼ਜ਼ਜ਼	ਜ਼ੇਜ਼ੋਜ਼ੋਜ਼ੋ	أخظظظظ	ਜੋਜੋਜੋਜੋਜੋ	idddddddd	, , , , , , , , , , , , , , , , , , ,	بنبن
910 911 913 914 915	917 918 920 921	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	927 928 930 931	9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	7 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	944 944 950 951 952	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	980 981 982
	00.00			w w E H w 1		Q917m0 mycobacteri Q52528 pseudomonas Q50633 mycobacteri P13424 drosophila			P13231 dictyosteli P43437 enterococcu P15404 white clove P34018 variola vir P11286 escherichia P18307 chilo iride P18308 chilo iride O9kfa1 bacillus ha	P01884 homo sapience (Aspero) Macaca fasc P16213 pongo pygma P27686 phascologsis P80255 nereis dive (9chg) lactococus P01815 homo sapience P19045 synechocyst P73305 synechocyst (97305 synechocyst (99) man (9chocyst (9)) ma	: 04 04 E
	.8 112 1 .8 112 1 .8 113 1 .8 113 1 .8 113 1	.8 113 1 .8 113 1 .8 113 1 .8 113 1 .8 113 1	.8 114 1 .8 114 1 .8 114 1 .8 114 1	.8 114 1 .8 115 1 .8 115 1 .8 115 1	. 8 115 1 . 8 115 1 . 8 115 1 . 8 115 1	.8 115 1 .8 115 1 .8 115 1 .8 116 1	.8 116 1 .8 116 1 .8 116 1 .8 116 1	.8 116 1 NU3N .8 116 1 NU3N .8 116 1 STP2 .8 116 1 STP2 .8 116 1 TKNY .8 116 1 TKNY .9 116 1 TKNY	.8 117 1 .8 117 1 .8 117 1 .8 117 1 .8 117 1 .8 118 1 .8 118 1	1.8 119 1 B2MG_HUMAN 1.8 119 1 B2MG_MACFA 1.8 119 1 B2MG_PONPY 1.8 119 1 HEMI_PHAGO 1.8 119 1 HEMI_PHAGO 1.8 119 1 HEMI_PHAGO 1.8 119 1 HPZB_LACLA 1.8 120 1 HV2B_HUMAN 1.8 120 1 NUSUB_KBNIA 1.8 120 1 RLIS_SYNY3 1.8 120 1 RLIS_SYNY3	.8 120 1 Y710 .8 120 1 YESS .8 121 1 GLN2
										00000000000000000000000000000000000000	

Gaps

;

```
This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the Buropean Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RX KUDELINE=98044031; Pubbmed=930437;

Runst F., Ogasawara N. Moszer I., Albertini A.M., Alloni G.,
Azevedo V., Bertero M.G., Bessieres P., Bolotin A., Borchert S.,
RA Azevedo V., Bertero M.G., Bessieres P., Bolotin A., Borchert S.,
RA Borriss R., Buruschi C.V., Caldwell B., Capuano V., Carter N.M.,
Brouillet S., Bruschi C.V., Connerton I.F., Cummings N.J., Daniel R.A.,
RA Bruillet R.D., Errington J., Farrer I.F., Cummings N.J., Daniel R.A.,
RA Eniz C., Fujter M., Fujta Y., Furma S., Galizzi A., Gallaron N.,
RA Ghim S.Y., Glaser P., Goffeau A., Golightly E.J., Grandi G.,
RA Hibbert H., Holsappel S., Hosono S., Hullo M.F., Itaya M., Jones L.,
RA Hibbert H., Molsappel S., Hosono S., Hullo M.F., Itaya M., Jones L.,
RA Hibbert M., Manana D., Kasahara Y., Klaerr-Blanchard M., Klein C.,
RA Guiseppi G., Guy B.J., Haga K., Haiech J., Harwood C.R., Henaut A.,
R. Hibert M., Molsappel S., Kummano M., Klein C.,
RA Kurita K., Lapidus A., Liu H., Masuda S., Manel C., Medigue C.,
RA Kurita K., Lapidus A., Liu H., Masuda S., Manel C., Medigue C.,
RA Medina N., Mellado R. P., Mizuno M., Mosel D., Ordela B., Park S.H.,
RA Prescen E., Pujic P., Mizuno M., Mosel D., Ordega B., Park S.H.,
RA Prescen E., Pujic P., Purnelle B., Rapoport G., Rey M., Reynolds S.,
RA Rieger M., Rivolta C., Rocha E., Roche B., Roche B., Rocke M., Sadate Y.,
Saklauch M., Tamakohli A., Tanaka T., Terpetra R.,
Rakeuch M., Tanaka A., Serror S.J., Serror P., Shin B.S.,
Sekiguchi J., Sekowska A., Serror S.J., Serror P., Toganor C., Vulyama S., Vandamacohl M., Vannier F., Vassarotti A.,
Rakeuch M., Tanaka H.F., Zumstein E., Roche B., Roche
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Nature 1901249-256 (1997).
-!- SIMILMSTTY: Belongs to the short-chain dehydrogenases/reductases
(SDR) family.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     STRAIN=168)

**MEDILINE=595020337; PubMed=7934828; MEDILINE=595020337; PubMed=7934828; MEDILINE=595020337; PubMed=7934828; Marcelino L., Moszer I., Hullo M.F., Ionescu M., Lubochinsky B., Marcelino L., Moszer I., Presecon E., Santana M., Schneider E., Schweizer J., Vertes A., Rapoport G., Danchinh A., Faching senome project: cloning and sequencing of the & Legion from 325 degrees to 333 degrees."; Mol. Microbiol. 10:371-384(1993).
                                                                                                                                                                                                                                                                                               01-FEB-1995 (Rel. 31, Created)
01-FEB-1995 (Rel. 31, Last sequence update)
01-FEB-1995 (Rel. 41, Last sequence update)
Hyporhetical oxidoreductase ywfD (EC 1.....).
YWFD OR IPA-82D.
Bacillus subtilis.
Bacteria, Firmitutes; Bacillales; Bacillaceae; Bacillus.
                       0; Indels
100.0%; Pred. No. 0.00024;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MEDLINE=98044033; PubMed=9384377;
Best Local Similarity 100.
Matches 12, Conservative
                                                                                                      7 GKVALITGGASG 18
                                                                         13 GKVALITGGASG 24
                                                                                                                                                                                                                                                      STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                      BACSU
                                                                                                                                                                                                                                                         P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB 1; Length 250;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               4.4%; Score 12;
```

```
COMTE
   ACT SITE
SEQUENCE
                                                                                                                12
                                       Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NP_BIND
                                                                                                                                                                 BPHB_COMTE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EMBL;
                                                               Matches
                                                                                                                                                                                                                                                                                            BPHB.
                                                                                                                                                                              d
                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation - the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch)
                                                                                                                                                                                                                                                       ö
   and for commercial
              (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Biochim. Biophys. Acta 1350:317-324(1997).
-!- CATALYTIC ACTIVITY: (S)-3-hydroxyacyl-CoA + NAD(+) = 3-oxoacyl-CoA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SUBUNIT: Homotetramer (By similarity).
SUBCELLULAR LOCATION: Mitochondrial.
SIMILARITY: Belongs to the short-chain dehydrogenases/reductases
                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                          15-JUL-1998 (Rel. 36, Created)
15-JUL-1998 (Rel. 36, Last sequence update)
16-OCT-2001 (Rel. 40, Last annotation update)
3-hydroxyacyl-CoA dehydrogenase type II (EC 1.1.1.35) (Type II HADH)
                                                                                                                                                                                                                                                                                                                                                                                                                                                         Bos taurus (Bovine).
Bukaryota, Metazoa; Chordata; Craniata; Vertebrata; Buteleostomi;
Mammalia; Butheria; Cetartiodactyla; Ruminantia; Pecora; Bovoidea;
Bovidae; Bovinae; Bos
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE=97214648; PubMed=9061028;
Futute S., Kobayashi A., Miyazawa S., Hashimoto T.,;
"Cloning and expression of cDNA for a newly identified isozyme of
bovine liver 3-hydroxyacyl-CoA dehydrogenase and its import into
                                                                                                                                                                                                                                                       ;
0
                                            EMBL; X77124; CAA51638.1; -.

EMBL; S39712; CAB15799.1; -.

PIR; S39712; S3973.

HSSP; P50162; JRR02198; VwfD.

InterPro; JRR002198; ADH short.

PFam; PF00106; adh short.

PRINTS; PR00080; SDRFAMILY.

PROSITE; PS00061; ADH SHORT.

PROSITE; PS00061; ADH SHORT;

PROSITE 154 154 BY SIMILARITY;

PACT SITE 154 154
                                                                                                                                                                                                                             Score 10; DB 1; Length 255;
                                                                                                                                                                                                                        3.7%; Score 10; ~~
100.0%; Pred. No. 0.025;
-ive 0; Mismatches 0; Indels
   Usage by
                                                                                                                                                                                                      20AA2259BFB88C9B CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NAD (BY SIMILARITY).
modified and this statement is not removed. entities requires a license agreement (See hor send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                    261 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A., AND PARTIAL SEQUENCE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pfam; PF00106; adh short; 1.
PRINTS; PR00080; SDRFAMIN.
PR0STTE; PS00061; ADH SHORT; 1.
Oxidoreductase; NAD; Mitochondrion.
NP_BIND 12 37 NAD (B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    interPro; IPR002198; ADH_short.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EMBL; AB002156; BAA19510.1; -.
                                                                                                                                                                                         154 154 E
255 AA; 27324 MW;
                                                                                                                                                                                                                        Query Match
Best Local Similarity 100.
Matches 10; Conservative
                                                                                                                                                                                                                                                                                                                                                                    STANDARD;
                                                                                                                                                                                                                                                                               17 LITGGASGIG 26
                                                                                                                                                                                                                                                                                                      11 Lircskscic 20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        O70351; 1E6W
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (SDR) family.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NCBI_TaxID=9913;
                                                                                                                                                                                                                                                                                                                                                                  HCD2 BOVIN
002691;
                                                                                                                                                                                     ACT SITE
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                        HCD2_BOVIN
                                                                                                                                                                                                                                                                                                                                                                                                                                              HADH2
 ò
                                                                                                                                                                                                                                                                                                    셤
```

```
This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation-the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isp-sib.ch).
                                                                                                                                   ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sylvestre M., Hurtubise Y., Barriault D., Beigeron J., Ahmad D.; "Characterization of active recombinant 2,3-dihydro-2,3-dihydro-gense from Commonas testosteroni B-356 and sequence of the encoding gene (bphB)."; Appl. Environ. Microbiol. 62:2710-2715(1996).
                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                            0463B1, 046376; 201 An. 2010 (Rel. 40, Last sequence update) 16-0CT-2001 (Rel. 40, Last annotation update) Cis-2,3-dihydrobiphenyl-2,3-dihydrogenase (EC 1.3.1.56) Alibydroxypiphenyl dehydrogenase (EC 1.3.4dihydro-2,3-dihydrosypiphenyl dehydrogenase) (Biphenyl-cis-diol dehydrogenase) (2,3-dihydroxy-4-phenylhexa-4,6-diene dehydrogenase) (B2,3D)
                                                                                                                                   ..
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Comamonas testosteroni (Pseudomonas testosteroni).
Bacteria; Proteobacteria; Betaproteobacteria; Burkholderiales;
                                                                              Length 261;
                                                  3.7%; Score 10; DB 1; Length 261
100.0%; Pred. No. 0.026;
Mismatches 0; Indels
BY SIMILARITY.
8C7572B6A9A49780 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRINTS; PR00080; SĒRFAMILY.
PROSITE; PS00061; ADH_SHORT; 1.
Aromatic hydrocarbons catabolism; Oxidoreductase; NAD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NAD (BY SIMILARITY)
                                                                                                                                                                                                                                                                                                                                                                              281 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A., AND CHARACTERIZATION.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MEDLINE=97045812; PubMed=8890734;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDLINE=96316386; PubMed=8702262;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            HSSP, P47227, 1BDB.
InterPro, IPR002198, ADH short.
Pfam, PF00106, adh_short, 1.
                         27140 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EMBL; U57451; AAB18304.1; -. EMBL; U47637; AAC44530.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Comamonadaceae; Comamonas.
NCBI_TaxID=285;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE OF 1-15 FROM N.A.
                                                                                                                                10; Conservative
                                                                                                                                                                                                                                                                                                                                                                           STANDARD;
  168
                                                                                                                                                                                     15 VALITGGASG 24
                                                                                                                                                                                                                                        VALITGGASG 21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PIR; PC4213; PC4213.
                                                                                                    Sest Local Similarity
```

```
ACT SITE
CONFLICT
CONFLICT
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       INIT MET
NP BIND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REC RETRAINELES.

REDLINE=98044033; PubMede=9384177;

RUBLINE=98044033; PubMede=9384177;

RUBLINE=98044033; PubMede=9384177;

RUBLINE=98044033; PubMede=9384177;

RUBLINE=98044033; PubMede=9384177;

RUBLINE=8. Boursier L., Brann A., Brignell S.C., Eron S., Bruckler S., Bruschi C.V., Caldwell B., Capuano V., Carter N.M., Chois S.K., Codani J.J., Connerton I.F., Cummings N.J., Daniel R.A., Britan R.D., Errington J., Fabret C., Ferrari B., Foulgar D., Ramerson P.T., R. Britan K.D., Errington J., Fabret C., Ferrari B., Foulgar D., Ramerson P.T., R. Hibert H., Holseppel S., Hoaga K., Haiech J., Harwood C.R., Henaut A., Hibert H., Holseppel S., Hoasono S., Hullo M.F., Itaya M., Jones L., R. Hibert H., Holseppel S., Hoasono S., Hullo M.F., Itaya M., Jones L., R. Kobayashi Y., Kaetrer Blanchard M., Klein C., R. Kobayashi Y., Koetter P., Koningstein G., Kumano M., Klein C., Rodyashi Y., Laridnois S., Lauber J., Lazarevic V., Racklily M., Ogawa K., Ogiwara A., Oudega B., Park S.H., Race S.M., Levine A., Liu H., Masuda S., Mauel C., Medigue C., Medigue C., Medigue C., Medigue C., Medila M., Mellado R., Diu H., Mosetl D., Nakai S., Prescott A.M., Raynolds S., Reger M., Rohle B., Roche B., Roch B., Ro
                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Hecker M.;
"First steps from a two-dimensional protein index towards a response-
                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STRAIN=168;
Kasahara Y., Nakai S., Lee S., Sadaie Y., Ogasawara N.;
"A 148 kbp sequence of the region between 35 and 47 degree of the
Bacillus subtilis genome.";
Submitted (MAR-1997) to the EMBL/GenBank/DDDJ databases.
                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STRAIN=168 / IS58;
MEDLINE=97443988; PubMed=9298659;
Antelmann H., Bernhardt J., Schmid R., Mach H., Voelker U.,
                                                                  / Match 10.0 Match 10.0 March 10.0 March 10.0 March 10.0 Marches 10.0 Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           rone.
Bacillus subtilis.
Bacteria; Firmicutes; Bacillales; Bacillaceae; Bacillus.
155 155 BY SIMILARITY.
281 AA; 29350 MW; D50A4CC9167A113E CRC64;
                                                                                                                                                                                                                                                                                                                                                                    GS39 BACSU STANDARD; PRT; 285 AA. 1980873; 196577; Created) 115-UUL-1998 (Rel. 35, Created) 115-UUL-1998 (Rel. 34, Last sequence update) 28-FEB-2003 (Rel. 41, Last annotation update) General Briess procein 39 (GSP39) (EC 1.-.-).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Nature 390:249-256(1997).
                                                                                                                                                                                     15 VALITGGASG 24
                                                                                                                                                                                                                               7 VALITGGASG 16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEOUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE OF 1-29
ACT SITE
SEQUENCE
                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                            G839_BACSU ACCORD BY BE BACSU DT 10 -06037 BR DT 11 -100V-DT 12 -000V-DT 12 -0000V-DT 12 -000V-DT 12 -
                                                                                                         Best Loca
Matches
   FT
                                                                                                                                                                                        ò
```

```
This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@lsb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Oudega B., Koningstein G., Rodrigues L., de Sales Ramon M.,
Hilbert H., Duesterhoeft A., Pohl T.M., Weltzenegger T.,
"Analysis of the Bacillus subtilis genome: cloning and nucleotide
sequence of a 62 kb region between 275 degrees (rrnB) and 284 degrees
regulation map for Bacillus subtilis.";
Electrophoresis 18:1451-1463(1997).
-!- INDUCTION: BY HEAT SHOCK, SALT STRESS, OXIDATIVE STRESS, GLUCOSE LIMITATION AND OXYGEN LIMITATION.
-!- SIMILARITY: Belongs to the short-chain dehydrogenases/reductases (SDR) family.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STRAIN=168;
MEDLINE=98044033; PubMed=9384377;
Kunst F., Ogasawara N., Moszer I., Albertini A.M., Alloni G.,
Azevedo V., Bertero M.G., Bessieres P., Bolotin A., Borchert S.,
Borriss R., Bourster L., Brans A., Braun M., Brignell S.C., Bron S.,
Enoulilet S., Bruschi C.V., Caldwell B., Capuano V., Carter N.M.,
Choi S.K., Codani J.J., Connerton I.F., Cummings N.J., Daniel R.A.,
Denizot F., Devine K.M., Dusterhoft A., Ehrlich S.D., Emmerson P.T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             3.3%; Score 9; DB 1; Length 285; 100.0%; Pred. No. 0.29; tive 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NAD OR NADP (BY SIMILARITY)
BY SIMILARITY.
E -> G (IN REF. 3).
P -> K (IN REF. 3).
9BA7EF096B2C9AAE CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       01.FEB-1995 (Rel. 31, Created)
15.-UL-1998 (Rel. 36, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
Hypotherical oxidoreductase yuxG (EC 1.-.-.) (OFF2).
YUXG OR YULA.
Bacillus subtilis.
Bacteria, Firmicutes, Bacillales, Bacillaceae; Bacillus.
11 TaxID=1423;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EMBL, Z99106; CAB12226.1; -.
PIR; D69768; D69768.
Subrilist; BG12052; AAB.
InterPro; IPRO002198, ADH Short.
PRO0106; adh Short.
PRINTS; PRO0060; SDRAMILY.
PRINTS; PRO0060; ADH SHORT; 1.
PRINTS; PRO0060; ADH SHORT; 1.
Oxidoreductase; Heat Shock; Complete proteome.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRT; 689 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STRAIN=168;
MEDLINE=97419515; PubMed=9274030;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Microbiology 143:2769-2774(1997).
                                                                                                                                                                                                                                                                                                                                                                                                                                                        EMBL; AB001488; BAA19257.1; -. EMBL; Z99106; CAB12226.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               21 21 E
26 26 P
285 AA; 30951 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local Similarity 100...
Lac 9; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               41 GKVALITGG 49
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            13 GKVALITGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             YUXG BACSU
P40747;
```

```
This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the Buropean Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A.
STRAIN=1033-5P14 / KAY2026;
MEDLINE=95035038; PubMed=7947968;
Webnicier U.F., Lengeler J.W.;
"Sequence of the sor-operon for L-sorbose utilization from Klebsiella
                                                                                                                                                                                                                                                                                                                                                                                                                          -!- CATALYTIC ACTIVITY: 2-deoxy-D-gluconate + NAD(+) = 3-dehydro-2-deoxy-D-gluconate + NADH.
-!-DATHWAY: Pectin degradation.
-!- SATHWAY: Belongs to the short-chain dehydrogenases/reductases
                                                                                                                                                                                                                                                                                                                                    Condemine G., Robert-Baudouy J.; "Analysis of an Erwinia chrysanthemi gene cluster involved in pectin
                                                                                                                                                                       Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
Enterobacteriaceae; Pectobacterium.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Bacteria, Proteobacteria, Gammaproteobacteria, Enterobacteriales,
Enterobacteriaceae, Klebsiella.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        .1.140) (Glucitol-6-
           01-OCT-11994 (Rel. 30, Created)
01-OCT-1994 (Rel. 30, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
2-deoxy-D-gluconate 3-dehydrogenase (EC 1.1.1.125) (2-keto-3-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BY SIMILARITY.
59E9827DEA471F76 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               phosphate dehydrogenase) (Ketosephosphate reductase).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NAD (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DB 1;
0. 2.7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     01-JUN-1994 (Rel. 29, Created)
01-JUN-1994 (Rel. 29, Last sequence update)
01-JUT-1996 (Rel. 34, Last annotation update)
Sorbitol-6-phosphate 2-dehydrogenase (EC 1.1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          267 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2.9%; Score 8; I
100.0%; Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRT;
                                                                                                                                                                                                                                                                                       STRAIN=3937;
MEDLINE=92114798; PubMed=1766386;
                                                                                                                                                                                                                                                                                                                                                                                                       Mol. Microbiol. 5:2191-2202(1991)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 HSSP; P19992; 1HDC.
InterPro; IPR002198; ADH_short.
Pfam; PF00106; adh_short; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRINTS; PR00080; SDRFAMILY.
PROSITE; PS00061; ADH_SHORT; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    253 AA; 27275 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        100.08;
                                                                                                    deoxygluconate oxidoreductase)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EMBL; X62073; CAA43989.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Klebsiella pneumoniae.
                                                                                                                                                 Erwinia chrysanthemi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PIR; S17711; S17711.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GKVALITG 20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Oxidoreductase; NAD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GKVALITG 17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Local Similarity
hes 8; Conserv
                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (SDR) family.
                                                                                                                                                                                                                      NCBI_TaxID=556;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NCBI TaxID=573;
                                                                                                                                                                                                                                                                                                                                                                               degradation.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SORD KLEPN
P37079;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ACT SITE
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACT CT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SORD KLEPN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 8
              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a alicense agreement (See http://www.isb-sib.ch/announce/or send an email to license@ibb.sib.ch).
Entian K.D., Errington J., Fabret C., Ferrari E., Foulger D.,

Ryd Fritz C., Fujita M., Fujita Y., Fuma S., Galizzi A., Galleron N.,

Ghim S.Y., Glaser P., Goffeau A., Golightly E.J., Grandi G.,

Guiseppi G., Guy B.J., Haga K., Haiech J., Harwood C.R., Henaut A.,

Hilbert H., Holsappel S., Hosono S., Hullo M.F., Itaya M., Jones L.,

Joris B., Karamata D., Kasahara Y., Klaerr-Blanchard M., Klein C.,

Kobayashi Y., Koetter P., Koningstein G., Krogh S., Kumano M.,

Kurita K., Lapidus A., Liu H., Masuda S., Mauel C., Medigue C.,

Medina N., Mellado R.P., Mizuno M., Mosell D., Nakai S., Noback M.,

Noone D., O'Reilly M., Ogawa K., Ogiwara A., Oudega B., Park S.H.,

Persecan E., Pujic P., Purnelle B., Ropoport G., Rey M., Reynolds S.,

Rieger M., Rivolta C., Rocha E., Roche B., Rose M., Sadaie Y.,

Sato T., Scanlan E., Schleich S., Schroeter R., Scoffone F.,

Schleich J., Tanaka T., Tanaka T., Takahashi H., Takemaru K.,

Takeuchi M., Tamakoshi A., Tanaka T., Tarahashi H., Takemaru K.,

Yazi A., Wambutt R., Wedler E., Wedler H., Weitzenegger T.,

Winters P., Wipat A., Yamamoto H., Yamane K., Yasumoto K., Yata K.,

Yoshida K., Yoshikawa H.F., Zumstein E., Yoshikawa H., Danchin A.;

subtilis ",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE OF 1-49 FROM N.A.
STRAIN=168 / O11085;
MEDLINE=168 / O11085;
MEDLINE=168 / O11085;
MEDLINE=194245722; PubMed=8188684;
MEDLINE=194245722; PubMed=8188684;
"Cloning and characterization of genes encoding methyl-accepting chemotaxis proteins in Bacillus subtilis.";
Cloning and Characterization of genes encoding methyl-accepting chemotaxis proteins 140466[1944].
J. Biol. Chem. 269:14038 to the short-chain dehydrogenases/reductases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 689;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Pfam; PF00106; adh short; 1.
Pfam; PF00596; Aldolase II; 1.
PROSTTE; PS00061; ADH SHORT; 1.
Hypothetical protein; Oxidoreductase; Complete proteome.
ACT_SITE 579 S79 SY STMT1.ADT.TV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          88A82FDC3EEDD0FD CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     3.3%; Score 9; DB 1;
100.0%; Pred. No. 0.62;
iive 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EMBL; 299120; CAB15111.1; -.
EMBL; 1.29189; AAA.0558.2; -.
PIR, H70024; H70024;
HSSP; PS529; 1FMC.
Subtiliat; BG10947; yuxG.
InterPro; IPR001309; Aldolase_II_N.
Bfam: DER0016; Ald. Aldolase_II_N.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        76020 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EMBL; Z93938; CAB07952.1; -. EMBL; Z99119; CAB15100.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Nature 390:249-256(1997).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         428 KVALITGGA 436
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  14 KVALITGGA 22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          689 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (SDR) family.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           KDUD ERWCH Q05528;
```

.. 0

Gaps

. 0

253 AA

PRT;

STANDARD;

RESULT 7 KDUD_ERWCH ID KDUD_EI AC Q05528;

ð 셤

SEQUENCE

Length 253; 0; Indels ဥ

```
ò
                                                                                                                                                                                                                                                                                                                                                                          This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the Buropean Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ..
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Furukawa K., Arimura N., Miyazaki T., "Nucaki T., "Nucaki T., "Nucleotide sequence of the 2.3-dihydroxybiphenyl dioxygenase gene of "Nucleotide sequence of the 2.3-dihydroxybiphenyl dioxygenase of Pseudomonas pseudoalcaligenes.", J. Bacteriol. 169:427-429(1997).
--- CATALYTIC ACTIVITY: Cis-3-phenylcyclohexa-3,5-diene-1,2-diol + NADH.
NAD(+) = biphenyl-2,3-diol + NADH.
                                                                             6-phosphate + NADH.
-!- PATHWAX: SORBITOL METABOLIC PATHWAX.
-!- SUBDNIT: Homotetramer (By similarity).
-!- SIMILARITY: Belongs to the short-chain dehydrogenases/reductases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   01-JAV.1988 (Rel. 06, Created)
01-NOV-1991 (Rel. 20, Last sequence update)
16-OCT-2001 (Rel. 40, Last annotation update)
16-OCT-2010 (Rel. 40, Last annotation update)
16-OCT-2010 (Rel. 40, Last annotation update)
16-OCT-2010 (Rel. 40, Last annotation update)
(Biphenyl-2,3-dihydro-2,3-diol dehydrogenaee) (2,3-dihydro-2,3-dihydroxybiphenyl dehydrogenaee) (Riphenyl-cis-diol dehydrogenase)
(2,3-dihydroxy-4-phenylhexa-4,6-diene dehydrogenase)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Pseudomonas pseudoalcaligenes.
Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales;
Pseudomonadaceae; Pseudomonas.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2.9%; Score 8; DB 1; Length 267; 100.0%; Pred. No. 2.8; ative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NAD (BY SIMILARITY).
BY SIMILARITY.
44A9C31964384DEC CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         275 AA
  pneumoniae KAY2026.";
Biochim. Biophys. Acta 1208:348-351(1994).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EMBL; X66059; CAA46856.1;
PIRSP; S50186; S50186.

PIRSP; P50162; JAB1.
InterPro; IPR002198; ADH short.
Pfam; PF00106; adh short.
PROSITE; P800061; ADH SHORT; 1.
PROSITE; P800061; ADH SHORT; 1.
PROSITE; P800061; ADH SHORT; 1.
PROSITE: 160 180 SIRLAR:
ACT SITE 160 160 BY SIMILAR:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDLINE=87083404; PubMed=3793719;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9 38 N
160 160 B
267 AA; 29005 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ouery Match
Best Local Similarity 100.
8; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            19 TGGASGIG 26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TGGASGIG 22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                          (SDR) family.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NCBI_TaxID=330;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PSEPS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ACT SITE
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BPHB PS
P08694;
  RRENER RENER RRENER RRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ð
```

```
This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bloinformatics and the ENEL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no may modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   This SWISS-PROT entry is copyright. It is produced through a collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEDLINE=98318037; PubMed=9655311;
MEDLINE=98318037; PubMed=9655311;
Huelsameyer M., Hecht H.-J., Niefind K., Hofer B., Eltis L.D.,
Huelsameyer M., Schomburg D.;
"Crystal structure of cis-biphenyl-2,3-dihydrodiol-2,3-dehydrogenase
from a PCB degrader at 2.0-A resolution.";
Protein Sci. 7:1286-1298 (1998).
-!-CATALYTIC ACTYLYTY: Cis-3-phenyl-cyclohexa-3,5-diene-1,2-diol +
NAD(+) = biphenyl-2,3-diol + NADB.
-!-PATHWAY: DEGRADATION OF BIPHENYLS AND POLYCHLOROBIPHENYLS (PCB) TO
BENZOTC ACID AND CHLOROBENZOIC ACIDS; SECOND STEP.
-!-SIMILARITY: Belongs to the short-chain dehydrogenases/reductases
(SDR) family.
-!- PATHWAY: DEGRADATION OF BIPHENYLS AND POLYCHLOROBIPHENYLS (PCB) 1
BENZOIC ACID AND CHLOROBENZOIC ACIDS; SECOND STEP.
-!- SIMILARITY: Belongs to the short-chain dehydrogenases/reductases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  01-FEB-1996 (Rel. 33, Created)
28-FEB-2003 (Rel. 41, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
Cis-2,3-dihydrobiphenyl-2,3-diol dehydrogenase (EC 1.3.1.56)
dihydroxybiphenyl dehydrogenase) (E.3.3-dihydro-2,3-dihydroxybiphenyl dehydrogenase) (Eiphenyl-cis-diol dehydrogenase)
(2,3-dihydroxy-4-phenylhexa-4,6-diene dehydrogenase).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE-9334, BLD Med-8344527; HobMed-8344527; Hofer B., Eltis L.D., Dowling D.N., Timmis K.N.; Hofer B., Eltis L.D., Dowling D.N., Timmis K.N.; Glis L.D., Dowling D.N., Timmis K.N.; Hofer B.D., Dowling of a Pseudomonas locus encoding a pathway for biphenyl/polychlorinated biphenyl degradation."; Gene 130:47-55(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Burkholderia cepacia (Pseudomonas cepacia).
Bacteria, Proteobacteria; Betaproteobacteria; Burkholderiales;
Burkholderiaceae, Burkholderia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2.9%; Score 8; DB 1; Length 275; 100.0%; Pred. No. 2.9; tive 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      HSSP; P47227; IBDB.
InterPro; IRP02198; ADH_short.
Fram; PF00106; adh short; 1.
FRINTS; PR00080; SDRFABLILY.
FROSITE; PS00061; ADH SHORT; 1.
Aromatic hydrocarbons catabolism; Oxidoreductase; NAD.
NP_BIND 933 NAD (BY SIMILARITY).
NP_BINE 153 IS3 BY SIMILARITY.
Aromatic 775 AA; 28726 MW; F32A4AB70B47E566 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  277 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EMBL; M15333; AAA25752.1; ALT_INIT.
HSSP; P47227; 1BDB.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local Similarity 100.0
Matches 8; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             17 LITGGASG 24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9 LITGGASG 16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A. STRAIN=LB400;
                                                                                                                      (SDR) family.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BURCE
```

```
(SDR) family.
                                                                                                                                                                                                                                                                                                                                                                                                                                               NCBI_TaxID=292;
                                                          NCBI_TaxID=303;
                                       Pseudomonas
                                                                                                                                                                                                                                                                                                                                                                                GSHR BURCE
                                                                                                                                                                                                                                                                                                                                                σ
                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                 Best Local
                                                                                                                                                                                                                                                                                                                                                                                      P48639
                                                                                                                                                                                                                                                                                                                                                                         GSHR_BURCE
                                                                                                                                                                                                                                                                                                                                                                    RESULT 12
  임
                                                                                                                                                                                                                                                                                                                                                                                à
        There are no restrictions on its 19 as its content is in no way red. Usage by and for commercial
                                                                                                                                                                                                                                                                                                                                                                                             ö
between the Swiss Institute of Bioinformatics and the EMBL outstation - the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                             Interpro; IPR002198; ADH_short.
Pfam; PF00106; adh short; 1.
PRINTS; PR00080; SDFRAMILY.
Aromatic ps00061; ADH Short; 1.
Aromatic hydrocarbons catabolism; Oxidoreductase; NAD; 3D-structure.
NP BIND 9 33 NAD (BY SIMILARITY).
ACT SITE 155 BY SIMILARITY.
STRAND 7 11
                                                                                                                                                                                                                                                                                                                                                                                             ...
                                                                                                                                                                                                                                                                                                                                                                               Length 277;
                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                   28901 MW; 00194120BD4E12D1 CRC64;
                                                                                                                                                                                                                                                                                                                                                                               DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                       277 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (Rel. 40, Created)
(Rel. 40, Last sequence update)
                                                                                                                                                                                                                                                                                                                                                                                      Pred. No. 2.9
Mismatches
                                                                                                                                                                                                                                                                                                                                                                               2.9%; Score 8; I
.00.0%; Pred. No.
                                                                                                                                                                                                                                                                                                                                                                               2.5°,
100.0%; Pt.
0;
                                            EMBL; X66122; CAA46909.1; -. PIR; JN0814; JN0814.
                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                     STANDARD;
                                                                                                            5
111
117
118
119
119
119
119
119
                                                                                                                                                                                                                                                                                                          228
236
241
243
251
                                                  PIR; JN0814; JN0814.
PDB; 1BDB; 12-NOV-97.
                                                                                                                                                                                                                                                                                                                                                                                                         LITGGASG 24
                                                                                                                                                                                                                                                                                                                                                            274 :
277 AA;
                                                                                                                                                                                                                                                                                                                                                                                     Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                      LITGGASG
                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                         17
                                                                                                                                                                                                                                                                                                                                                                                                                      σ
                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                                                                                        TURN
HELIX
TURN
STRAND
HELIX
                                                                                                                                                                                                                                     STRAND
HELIX
                                                                                                                                                                                                                                                                          STRAND
HELIX
                                                                                                                                                               STRAND
                                                                                                                                                                                 STRAND
                                                                                                                                                                                                                                                                                                                                   STRAND
                                                                                                                                                                                                                 TURN
HELIX
TURN
                                                                                                                                                                                                           HELIX
                                                                                                                                                                                                                                                                                                                                                                                                                                               BPHB_PSEPU
                                                                                                                                                                                                                                                                                              GRN
GRN
                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT 11
8
```

```
This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@ib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ဥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Khan A.A., Wang R.F., Nawaz M.S., Cerniglia C.E.; and C.E.; and Colide sequence of the gene encoding cis-biphenyl dihydrodiol dehydrogenase (bphB) and the expression of an active recombinant Histagged bphB gene product from a PCB degrading bacterium, Pseudomonas putida OUB3.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FERS Microbiol. Lett. 154:317-324(1997).
-!- CATALYTIC ACTIVITY: Cis-3-phenylcyclohexa-3,5-diene-1,2-diol +
NAD(+) = biphenyl-2,3-diol + NADH.
-!- PATHWAY: DEGRADATION OF BIPHENYLS AND POLYCHLOROBIPHENYLS (PCB) T
BENZOIC ACID AND CHLOROBRIZOIC ACIDS; SECOND STEP.
-!- SUBUNIT: Homotetramer (Probable).
-!- SUBUNIT: Belongs to the short-chain dehydrogenases/reductases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
16-OCT-2001 (Rel. 40, Last annotation update)
(16.2,3.4hydroblabhenyl-2,3.4iol dehydrogenase (EC 1.3.1.56)
(Biphenyl-2,3.4ihydro-2,3.4iol dehydrogenase) (2,3.4ihydro-2,3.4ihydro-2,3.4ihydro-2,3.4ihydro-2,3.4ihydro-2,3.4ihydrogenase) (Biphenyl-cis-diol dehydrogenase)
                                                                                                                                                                                                                                               Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales;
Pseudomonadaceae; Pseudomonas.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ..
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Bacteria, Proteobacteria, Betaproteobacteria, Burkholderiales,
Burkholderiaceae, Burkholderia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 277;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 HSSP; P4727; 1BDB.

InterPro; 1PR002198; ADH short.

Pfam; PF00106; adh short; 1.

PRINTS; PR00060; SDRFAMILY.

PROSITE; PS00061; ADH-SHORT; 1.

PROSITE: STMILARITY.

SEQÜENCE 277 AA; 28907 MW; A7048159903BE527 CRC64;
                                                                                                                                        (2,3-dihydroxy-4-phenylhexa-4,6-diene dehydrogenase).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               01-FEB-1996 (Rel. 33, Created)
01-FEB-1996 (Rel. 33, Last sequence update)
01-FEB-2003 (Rel. 41, Last annotation update)
Glutathione reductase (EC 1.8.1.7) (GR) (GRase)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2.9%; Score 8; DB 1;
100.0%; Pred. No. 2.9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 449 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Burkholderia cepacia (Pseudomonas cepacia)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        [1]
SEQUENCE FROM N.A.
STRAINAC1100;
MEDLINE-95266809; PubMed=7538273;
                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEDLINE=97457193; PubMed=9311131;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EMBL; Y07655; CAA68939.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              17 LITGGASG 24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LITGGASG 16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
8; Conserva
                                                                                                                                                                                                          putida
                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A.
```

```
This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the BMBL outstation the Buropean Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ö
Daubaras D.L., Hershberger C.D., Kitano K., Chakrabarty A.M.;
"Sequence analysis of a gene cluster involved in metabolism of 2,4,5-
trichlorophenoxyacetic acid by Burkholderia cepacia AC1100.";
Appl. Environ. Microbiol. 61:1279-1289(1995).
-!- CATALYTIC ACTIVITY: 2 glutathione + NADP(+) = glutathione
disulfide + NADPH.
-!- COPACTOR: FAD.
-!- STATHWAY 2.4,5-trichlorophenoxyacetic acid degradation.
-!- STHUMY 2.2,5-trichlorophenoxyacetic acid degradation.
-!- SUBCELLULAR LOCATION: Cytoplasmic.
-!- SUBCELLULAR ENCATION: Cytoplasmic.
-!- MISCELLARBOUG: THE ACTIVE SITE IS A REDOX-ACTIVE DISULFIDE
-!- STHALLARITY: BELONGS CLASS-I.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              STRAIN=972;
MEDLINE=21848401; PubMed=11859360;
Wood V., Gwilliam R., Rajandream M.A., Lyne M., Lyne R., Stewart A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              / Match 2.9%; Score 8; DB 1; Length 449; Local Similarity 100.0%; Pred. No. 4.4; es 8; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Schizosaccharomyces pombe (Fission yeast).
Eukaryota, Fungi, Ascomycota, Schizosaccharomycetes;
Schizosaccharomycetales; Schizosaccharomycetaceae;
Schizosaccharomyces.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        R27A SCHPO STANDARD; PRT; 136 AA. 01438; O74167; 115-DEC-1998 (Rel. 37, Created) 15-DEC-1998 (Rel. 37, Last sequence update) 28-FEB-2003 (Rel. 41, Last annotation update) 60S ribosomal protein L27-A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        36 HGAKVAIA 43
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          27 HGAKVAIA 34
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 13
R7A_SCH SO
ID 75CH SO
DT 15-DEC.
DT 15-DEC.
DT 28-FEB-
DE GON SCH SO
OC SCH SCH SO
OC SCH SCH SO
OC SCH SCH SO
OC SCH SCH SO
OC SCH SCH SO
OC SCH SCH SO
OC SCH SCH SO
OC SCH SCH SO
OC SCH SCH SO
OC SCH SCH SO
OC SCH SCH SO
OC SCH SCH SO
OC SCH SCH SO
OC SCH SCH SO
OC SCH SCH SO
OC SCH SCH SO
OC SCH SCH SO
OC SCH SCH SO
OC SCH SCH SO
OC SCH SCH SO
OC SCH SCH SO
OC SCH SCH SO
OC SCH SCH SO
OC SCH SCH SO
OC SCH SCH SO
OC SCH SCH SO
OC SCH SCH SO
OC SCH SC
             à
```

```
This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the Buropean Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
RA Sgouros J., Peat N., Hayles J., Baker S., Basham D., Bowman S.,
RA Brooks K., Brown D., Brown S., Chillingworth T., Churcher C.M.,
Collins M., Connor R., Cronin A., Davis P., Hidalgo J., Hodgson G.,
RA Gentles S., Goble A., Hamlin N., Harris D., Hidalgo J., Hodgson G.,
RA Holroyd S., Hornbby T., Howarth S., McDonald S., McGens B.,
James K., Jones L., Jones M., Leather S., McDonald S., McGell C.,
RA Mooney P., Moule S., Mungall K., Murphy L., Niblett D., Odell C.,
RA Rutherford K., Rutter S., Sanch S., Stevens K.,
RA Rutherford K., Taylor R.G., Sanch S., Stevens K.,
RA Retion J. Simmonds M., Squares R., Stevens K.,
RA Mocdward J., Volckart G., Aert R., Robben J., Grymonprez B.,
Moodward J., Volckart G., Aert R., Robben J., Grymonprez B.,
RA Metlejns I., Vanstreels E., Rieger M., Schaefer M., Mteller-Auer S.,
RA Borzym K., Langer I., Beck A., Lehrach H., Reinhardt R., Pohl T.M.,
RA Goffeau A., Cadieu E., Dreano S., Gloux S., Lelaure V., Mottier S.,
RA Gollbert P., Zimmermann W., Wedler H., Wambut R., Purnelle B.,
RA Goffeau A., Cadieu E., Dreano S., Gloux S., Lelaure V., Mottier S.,
RA Lucas M., Rochet M., Galllardin C., Tallada V.A., Garzon A., Thode G.,
RA Dominguez A., Revvelta J.L., McCombie W.R., Paulsen I., Potashkin J.,
RA Spribkovski G.V., Ussery D., Narse P.,
RA Spribkovski G.V., Ussery D., Barrell B.G., Nurse P.,
RA Spribkovski G.V., Ussery D., Barrell B.G., Nurse P.,
RT "The genome sequence of Schizosaccharomyces pombe.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Kawamukai M.;
"S.pombe ribosomal protein L27 homolog.";
"S.pombe ribosomal protein L27 homolog.";
Submitted (JUN-1998) to the EMBL/GenBank/DDBJ databases.
--- MISCELLANEOUS: THERE ARE TWO GENES FOR L27 IN S.POMBE.
--- SIMILARITY: BELONGS TO THE L27E FAMILY OF RIBOSOMAL PROTEINS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   .;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 136;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STRAIN=972;
Jang Y.J., Yoo H.S.;
Submitted (APR-1997) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CONFLICT 4 6 ILK -> GTR (IN REF. 3). SEQUENCE 136 AA; 15389 MW; 3D5C1526AD501F72 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2.6%; Score 7; DB 1;
100.0%; Pred. No. 16;
:ive 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EMBL, AL049474; CAB393641;

EMBL, U97385; AAB63877.1;

EMBL, U97385; AAB63877.1;

PIR, T43374; T43374.

GeneDB_SPombe; SPBC685.07c;

InterPro; IPR005824; KOW.

InterPro; IPR006464; KOW.

InterPro; IPR001141; Ribosomal_L27e.

Pfam; PF0177; Ribosomal_L27e;

Pfam; PF0177; Ribosomal_L27e;

SWART; SM00739; KOW; 1.

PROSTER; PS01107; RIBOSOMAL_L27e;

SWART; SN107; RIBOSOMAL_L27e;

COMPLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE OF 4-136 FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE OF 1-74 FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local Similarity 100..
Tr Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          13 GKVALIT 19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GKVALIT 14
              ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Dp
```

```
Submitted (NOV-1994) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                           Job time : 55 secs
 Lloyd C.
                                                                                                                                                                                                                                                                                                                   Matches
ð
                                                                                                                                                                                                                                                                                                                                                                                                                                   This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation-the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                         SUBUNIT: Homodimer, disulfide-linked.
SUBUNIT: Homodimer, disulfide-linked.
SUBCELLULAR LOCATION: Cytoplasmic.
SUBCELLULAR LOCATION: Cytoplasmic.
COMPACTMENTS BELONGING TO THE HYDODERMIS, THE DORSAL, VENTRAL AND LATERAL CORDS, THE NEWUR RING, AND BODY WALL MUSCLE.
FTM: THE N-TERMINUS IS BLOCKED.
SIMILARITY: Belongs to the globin family.
                                                    01-FEB-1996 (Rel. 33, Created)
01-FEB-1996 (Rel. 33, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
Myoglobin (Globin, body wall isoform)
Ascaris suum (Pig roundworm) (Ascaris lumbricoides)
Eukaryota, Metazoa; Nematoda, Chromadorea; Ascaridida; Ascaris.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Caenorhabditis elegans.
Eukaryota; Metazoa; Nematoda; Chromadorea; Rhabditida; Rhabditoidea;
Rhabditidae; Peloderinae; Caenorhabditis.
                                                                                                                                                                                                      TISSUE=Body wall muscle;
MEDLINE=95074010; PubMed=7982924;
Blaxter M.L., Vanfleteren J.R., Xia J., Moens L.;
Blaxter M.L., Vanfleteren J.R., Xia J., Moens L.;
J. Biol. Chem. 269:30181-30186(1994).
-I- FUNCTION: HIGH OXYGEN AFFINITY. PROBABLY SUPPLIES OXYGEN NEEDED FOR MUSCLE ACTIVITY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 .
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             01-NOV-1997 (Rel. 35, Created)
01-NOV-1997 (Rel. 35, Last sequence update)
01-NOV-1997 (Rel. 35, Last annotation update)
Hypothetical 15.4 kDa protein Cl6Cl0.11 in chromosome III.
Cl6Cl0.11.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2.6%; Score 7; DB 1; Length 153; 100.0%; Pred. No. 18; ive 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PROSITE; PS01033; GLUCALN, - PROSITE; DXYGEN transport. Transport. Heme; Oxygen transport; Transport. METAL 94 94 (BY SIMILARITY). (BY SIMILARITY).
                            153 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    154 AA.
                                                                                                                                                                                           SEQUENCE FROM N.A., AND PARTIAL SEQUENCE
                          PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        HSSP; P28316; 1ASH.
InterPro; IPR000971; Globin.
Pfam; PF00042; globin; 1.
PROSITE; PS01033; GLOBIN; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EMBL; U17337; AAA64695.1; -.
PIR; A55139; A55139.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ouery Match
Best Local Similarity 100.
                          STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          198 ALGKKFS 204
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     133 ALGKKFS 139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A. STRAIN=Bristol N2;
                                                                                                                                                               NCBI_TaxID=6253;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NCBI_TaxID=6239;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 15
YQSB_CAEEL
ID YQSB_CAEEL
AC Q09254;
                          ASCSU
                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ð
```

```
This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation - the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@lsb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ö
                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 154;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0; Indels
                                                                                                                                                                                                                                                                                                                                                                                         15388 MW; 5F5C618B637D2683 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                         2.6%; Score 7; DB 1;
100.0%; Pred. No. 18;
trive 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Search completed: October 23, 2003, 13:03:11
                                                                                                                                                                                                                      EMBL; 246787; CAA86749.1; -. PIR; T19332; T19332. WormPep; C16C10.11; CE01491. InterPro; IPR007017; DUF657. 1. Hypothetical protein. SEQUENCE 154 AA; 15388 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity 100
7; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            155 GGGSSHA 161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               90 GGGSSHA 96
                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local S
```

4			
		,	
	(A)		
	,		
		¥	
			·s
	•		
*			
Ç.			4
	,•		•

```
Q92ppB rhizobium m Q98ppB rhizobium m Q98ppB rhizobium m Q98pq2 caulobacter Q8yq24 brucella me Q8e370 streptococc Q8dxe7 pedephyllum Q9k5c3 burkholderii Q9c8c6 arabidopsis Q8lic3 oryza sativ Q8lic4 oryza sativ Q8lic4 oryza sativ Q9de70 oromis sat Q9de70 oromis sativ Q8de74 bifidobacteri Q9de70 oromis sativ Q81pp brucella me Q9de81 oromis sativ Q81pp brucella me Q94c81 arabidopsis Q9de19 pseudomonas Q9de7197 streptomyce Q91cv7 streptomyce
          Q8lid3 oryza sativ
Q8fv38 brucella su
Q8kwt4 bacillus su
Q8kws9 bacillus am
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Q8xww9 ralstonia s
Q97ua4 sulfolobus
Q8khi5 pectobacter
Q9s9w2 arabidopsis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0930u6 rhizobium m
0928s3 rhizobium m
08ttls methanosarc
08tz65 brucella su
093y47 digitalis l
095tls streptomyce
09fbtl streptomyce
 28wzx3 neurospora
QBWZX3
QBKWT4
QBKWT4
QBKWT4
QBKWT4
QBYR25
QBYR25
QBYR25
QBYR27
QB
260
260
262
 Q94kl7 forsythia i
Q90590 nicotiana t
O50038 nicotiana t
O502xl7 arabidopsis
Q94le4 arabidopsis
Q91w34 arabidopsis
P93697 vigna ungui
Q8h0d9 phaseolus l
Q81d4 oryza sativ
Q8sbd7 ipomoea tri
Q9sbd7 ipomoea tri
Q9sbd8 aspergillus
                                                                 ; Search time 96 Seconds
(without alignments)
733.837 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 results predicted by chance to have a to the score of the result being printed, of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Description.
                                                                                                                   273
1 MQLRTAFARRLEGKVALITG......IDGGFSVCNSVIKVFQYPDS
         GenCore version 5.1.6
(c) 1993 - 2003 Compugen Ltd.
                                                                                                                                                                                                                      parameters
                                                                                                                                                                             830525 segs, 258052604 residues
                                                                                                                                                                                                                                                                      summaries
                                                                    ٠.
                                               protein search, using sw model
                                                                   2003, 12:59:05
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Q9SBD6
O82465
P87017
Q8J2U8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          094KL7
040590
050038
092K17
0941E4
091W34
08H0D9
08HDD9
08LD4
08S9B7
09SBD7
                                                                                                                                               OLIGO
Gapop 60.0 , Gapext 60.0
                                                                                                                                                                                                                                                                                                                sp_human:*
sp_human:*
sp_human:*
sp_invertebrate:*
sp_mammal:*
sp_organelle:*
sp_organelle:*
sp_plant:*
sp_plant:*
sp_rodent:*
sp_vertebrate:*
sp_virus:*
sp_virus:*
sp_virus:*
sp_virus:*
sp_virus:*
sp_virus:*
sp_virus:*
                                                                                                                                                                                                                    Potal number of hits satisfying chosen
                                                                                                                                                                                                                                                                                                                                                                                                                                            sp_rvirus:*
sp_bacteriap:*
sp_archeap:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pred. No. is the number of res
score greater than or equal to
and is derived by analysis of
                                                                                                                                                                                                                                                                    Post-processing: Listing first 1000
                                                                                                                                                                                                                                                                                                sp_archea:*
sp_bacteria:*
                                                                                                                                                                                                                                       seq length: 0
seq length: 200000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-09-673-918A-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length
                  Copyright
                                                                   October 23,
                                                                                                                                                                                                                                                                                         SPTREMBL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    10
                                                                                                                                                                                                0
                                                                                                          Title:
Perfect score:
Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         11
11
11
12
12
13
13
14
14
17
17
17
17
                                                                                                                                                 Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score
                                                                                                                                                                                                  ••
                                                                                                                                                                                                                                       Minimum DB
Maximum DB
                                               protein
                                                                                                                                                                                                                                                                                         Database :
                                                                                                                                                                                                Word size
                                                                                                                                                                             Searched:
                                                                  Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Š.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Result
```

Q8gde6 pseudomonas Q9977e0 acinecobact Q901313 lycopersico Q8pr00 xanthomonas Q8pr01 astathomonas Q8cd73 staphylococo Q9yc93 astaphylococo Q9yc93 aracobactail Q8br06 agrobacteri Q8br07 xhizobium n Q912c9 streptomyce Q983u4 xhizobium n Q912c9 streptomyce Q983u4 xhizobium n Q912c9 streptomyce Q981u4 xhizobium n Q91cg3 lycopersico Q984u1 xhizobium n Q9br07 xanthomonas Q8ub53 agrobacteri Q8ub53 agrobacteri Q9ub53 agrobacteri Q9ub53 agrobacteri Q9ub54 xyizobium n Q9aphi caulobacteri Q9ub53 agrobacteri Q9ub53 agrobacteri Q9ub54 streptomyce Q9uj13 agrobacteri Q9ub53 agrobacteri Q9ub53 agrobacteri Q9ub53 agrobacteri Q9ub53 agrobacteri Q9ub53 agrobacteri Q9ub53 agrobacteri Q9uj3 pseudomonas Q8ub53 streptomyce Q8uj3 valleye der Q9cj13 arabidopsis Q9lv6 arabidopsis Q9lv6 arabidopsis Q9lv6 arabidopsis Q8uy5 raleronia s Q8ub162 cyraa sativ Q8xrp5 raleronia s Q8ub18 pseudomonas Q8ub8 anabaena sp Q9lib8 oryza sativ Q8vrj4 drosophila Q8yrj8 pseudomonas Q8lib8 oryza sativ Q8vrj4 drosophila Q8yrj4 pycosococococococococococococococococococ	QBy839 anabaena sp QBtrki methanosarc QSX209 rhodospirila Q9ve86 drosophila Q9101 drosophila Q911 drosophila Q9211 rhizobium m O77370 plasmodium Q9796 brucella me Q8719 brucella su Q97404 schizosacch Q8753 rhizobium l Q8853 rhizobium l
163 7 2.6 250 2 QBCDE6 164 7 2.6 251 2 QPCDE6 168 7 2.6 251 10 QBCDTD 169 7 2.6 251 10 QBCDTD 169 7 2.6 251 16 QBCDTD 171 7 2.6 251 16 QBCDTD 172 7 2.6 252 17 GBCDTD 173 7 2.6 252 16 QBCDTD 174 7 2.6 252 16 QBCDTD 175 7 2.6 253 16 QBCDTD 176 7 2.6 255 16 QBCDTD 177 7 2.6 255 16 QBCDTD 178 7 2.6 255 16 QBCDTD 179 7 2.6 255 16 QBCDTD 189 7 2.6 255 16 QBCDTD 189 7 2.6 259 16 QBCDTD 189 7 2.6 269 1 GBCDTD 189 7 2.6 269 1 GBCDTD 189 7 2.6 269 1 GBCDTD 180 7 2.6 289 16 QBCDTD 180 7 2.6 289 16 QBCDD 180 7 2.6 289 16 QBCDTD 180 7 2.6 28	7 2.6 339 16 7 7 7 2.6 339 16 7 7 7 2.6 3340 17 7 7 2.6 3340 17 7 2.6 3343 16 7 7 7 2.6 3353 16 7 7 7 2.6 3353 16 7 7 7 2.6 3353 16 7 7 7 2.6 3353 16 7 7 7 2.6 3353 16 7 7 7 2.6 3353 16 7 7 7 2.6 3353 16 7 7 7 2.6 3353 16 7 7 7 2.6 3353 16 7 7 7 2.6 3353 16 7 7 7 2.6 3353 16 7 7 7 2.6 3353 16 7 7 7 7 2.6 3353 16 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
Ogriy4 streptomyce Ogsgf9 pisum sativ Ogsgf3 pisum sativ Ogsbf4 secherichia Ogsg6 pisum cationia Ogsg7 pseudomonas Ogsg7 pseudomonas Ogsg7 pseudomonas Ogsg7 pseudomonas Ogsg7 pseudomonas Ogsg7 pseudomonas Ogsg7 rapingomona Ogsg7 rapingomona Ogsg7 rapingomona Ogsg7 rapingomona Ogsg7 rapingomona Ogsg7 rapicoccus Ogsg7 rapicoccus Ogsg7 rapicoccyst Ogsg7 rapicocyst Ogsg7 rapicopacter Ogsg7 rapicocyst Ogsg7 rapicocyst Ogsg7 rapicocyst Ogsg7 rapicocyst Ogsg7 rapicocyst Ogsg7 rapicocyst Ogsg7 rapicoccyst Ogsg7 rapicocyst Ogsg7 rapicoccyst Ogsg7 rapicoccyst Ogsg7 rapicoccyst Ogsg7 rapicoccyst Ogsg7 rapicoccyst Ogsg7 rapicocccus Ogsg7 rapicocccus Ogsw6 cocuming ogst2 rapicocccus Ogsv6 cocuming ogsg7 rapicocccus Ogyw6 cocuming ogsg7 rapicocccus Ogyw6 cocuming ogsg7 rapicocccus Ogyw6 cocuming ogsg7 rapicocccus Ogw6 cocuming ogsg7 rapicocccus Ogsw6 cocuming ogsg7 rapicocccus Ogsw6 cocuming ogsg7 rapicocccus Ogyw6 cocuming ogsg7 rapicocccus Ogyw6 cocuming ogsg7 rapicocccus Ogyw6 rapicoccus Ogyw6 rapicoccus Ogyw6 r	Oglies lymantria d Oglies lymantria d Oglies lymantria d Oglog Brdy Chermonaer Oglog methylobact Oglog xanthobacte Oglyfy brucella me Oglyfy brucella me Oglym Ogresnia pe Oglym Ogresnia pe Oglym Ogl
8 2.9 268 10 098079 8 2.9 268 10 098079 8 2.9 268 10 098073 8 2.9 268 16 0985073 8 2.9 268 16 0985073 8 2.9 271 2 094784 8 2.9 277 2 094784 8 2.9 286 16 094784 8 2.9 287 16 094784 8 2.9 289 16 094784 8 2.9 331 16 096733 7 2.6 113 16 09773 7 2.6 113 11 009775 7 2.6 113 11 009771 7 2.6 113 11 009771 7 2.6 113 10 097774 7 2.6 113 11 009771 7 2.6 203 10 097774 7 2.6 203 10 097783 7 2.6 203 10 097783 7 2.6 203 10 097783 7 2.6 233 16 097783	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
88 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	15.5 15.1 15.2 15.2 15.3 15.6 16.0 16.0

o 1	QBwcc5 homo saplen Q47114 escherichia O16161 mytilus edu Q91223 pseudomonas	Quites caenorhabdi Q19128 caenorhabdi	Q8DK82 mus musculu P70888 bacteroides Q8mq86 caenorhabdi	Q81671 oryza sativ Q9nkt8 leishmania	Q8vdn3 mus musculu Q8g4q1 bifidobacte	Qepzii mechanosaic QBedg6 shewanella O98fb4 rhizobium l	Q12271 saccharomyc O9kuu5 vibrio chol	Q9fjq9 arabidopsis Q9v953 drosophila	Q9wug5 rattus norv Q8ya32 listeria mo	Q9ysis norwalk vir Q8jxji norwalk-lik	Q9YS03 homo sapien	Q9nyes homo sapien	QSCII/ BACCHAIOMYC QQQQQQA QACCHAICMYC QRilii saccharcmyc	Q8jlr0 saccharomyc O8jlr0 saccharomyc O8gsk5 hepatitis c	Oggsko hepatitis c Oggsho hepatitis c	Qaqska hepatitis c Oadsil hepatitis c	Q8qsk3 hepatitis c Q8qsj0 hepatitis c	Q8qsi9 hepatitis c Q8qsj9 hepatitis c	Q8qsk6 hepatitis c Q8qsj5 hepatitis c	Q8qsj8 hepatitis c Q8qsj7 hepatitis c	Q8qsj3 hepatitis c Q8qsk2 hepatitis c	QQqsjq nepacitis c QQqsj2 hepacitis c	072996 hepatitis c 072995 hepatitis c	O72997 hepatitis c O72999 hepatitis c	O72998 hepatitis c O72994 hepatitis c	O73007 hepatitis c O73004 hepatitis c	Q9r4x9 azotobacter Q8kka8 proteus vul	Q91k62 hepatitis c Q987d0 rhizobium l	Q9xsr9 canis famil Q9pxq4 hepatitis c	QBULLS pyrococcus Q9qk97 rift valley O9qk94 rift vallev	Ogqk90 rift valley Ogqk93 rift valley	Q9qka0 rift valley Q9qk96 rift valley
7 2.6 824 4	310 7 2.6 830 4 QBWVCS 311 7 2.6 872 2 Q47114 312 7 2.6 902 5 O16161 313 7 2.6 908 16 Q912W3	7 2.6 928 2	7 2.6 938 II 7 2.6 946 2 7 2.6 955 5	7 2.6 960 10 7 2.6 975 5	7 2.6 1024 11 7 2.6 1039 16	7 2.6 1088 16 7 2.6 1088 16 7 2.6 1092 16	7 2.6 1107 3 7 2.6 1291 16	7 2.6 1417 10 7 2.6 1469 S	7 2.6 1530	7 2.6 1784 12 7 2.6 1787 12	7 2.6 2692 4	7 2.6 2725 4	6 2.2 11 3	6 2.2 20 3 6 2.2 27 12	6 2.2 27 12 6 2.2 27 12	6 2.2 27 12 6 2.2 27 12	6 2.2 27 12 6 2.2 27 12	6 2.2 27 12 6 2.2 27 12	6 2.2 27 12 6 2.2 27 12	6 2.2 27 12 6 2.2 27 12	6 2.2 27 12 6 2.2 27 12	6 2.2 .27 12	6 2.2 33 12 6 2.2 33 12 6 2.2 33 12	6 2.2 33 12 6 2.2 33 12	6 2.2 33 12 6 2.2 33 12	6 2.2 33 12 6 2.2 33 12	6 2.2 36 2 6 2.2 37 2	6 2.2 40 12 6 2.2 41 16	6 2.2 43 6 6 2.2 45 12	6 2.2 46 17 6 2.2 47 12 6 2.2 47 12	25.5	6 2.2 47 12 6 2.2 47 12
xenopus lae	Q8vqq9 secherithia Q93q33 salmonella. Q9852 escherichia Q9852 emme musculu	escherichia escherichia esluonella	salmonella eromonas h zea mays (m	methanosarc methanosarc	methanosarc methanosarc	oryza saciv rypanosoma aenorhabdi	como sapien	halobacteri Irosophila	arabidopsis aenorhabdi	agrobacteri chlorobium	rosophila rosophila	bullolobus eptospira	deinococcus	caulobacter beendomonas	oryza sativ	bacillus ha	brucella me	bacillus ha clostridium	leurospora arabidopsis	lrosophila streptomyce	lrosophila arabidopsis	oryza sativ arabidopsis	rhizobium l	pseudomonas leurospora	rosophila rosophila	hodobacter corynebacte	arabidopsis arabidopsis	arabidopsis rhizobium m	agrobacteri antoea cit	brucella su salmonella salmonella	escherichia brucella me	escherichia escherichia
6 369 13	7 2.6 372 2 QBVQ49 7 2.6 372 2 Q93Q33 7 2.6 372 2 Q9SS22 7 2.6 372 11 QBKQC9	2.6 372 16 2.6 373 16	2.6 377 2 2.6 377 2 2.6 377 10	2.6 377 17	2.6 377 17 2.6 377 17	2.6 383 5 2.6 384 5	2.6 386 4 2.6 390 5	2.6 390 17 2.6 395 5	2.6 395 10	2.6 399 16 2.6 399 16	.6 422 5	2.6 428 2	2.6 431 16 2.6 431 16 2.6 436 5	.6 444 16 .6 451 16	2.6 462 10 2.6 466 16	.6 466 16 .6 470 2	.6 502 16 .6 502 16	.6 515 16 .6 519 16	2.6 528 3 2.6 532 10	2.6 533 5 2.6 544 16	2.6 550 5	2.6 564 10	2.6 586 16 2.6 592 4	2.6 601 16 2.6 609 3	2.6 634 5 2.6 634 5	2.6 643 2 2.6 659 16	2.6 677 10 2.6 679 10	2.6 693 10 2.6 717 16	2.6 724 16 2.6 790 2	2.6 796 16 2.6 796 16 2.6 796 16	.6 796 16 .6 797 16	2.6 802 16 2.6 823 16
236	233 239 240	242	245 245	247	249 250 21	252 253	254 255	256 257	258 259	261 261	263	. 592	267 267 268	269 270	271	273	275 276	277 278	279 280	281 282	283 284	286	288 288 289	290 291	292 293	294 295	296 297	298 299	300	303 303 304	305	308 308

Thu Oct 23 14:56:13 2003

us-09-673-918a-2.oligo.rspt

2003
14:56:13
23
Oct
Thu

Q84996 porcine rep Q84990 porcine rep Q84998 porcine rep Q84999 porcine rep Q84999 porcine rep	Q84992 POTCLING TEP Q84991 POTCLING TEP Q84999 POTCLING TEP Q84999 POTCLING TEP Q84997 POTCLING TEP	Q94995 portine rep Q84995 portine rep Q914a5 pseudomonas Q8K7q7 streptococc Q44954 bacillus br Q9spc3 brassica ol	Q9axy7 brassica ol Q9spc6 brassica na Q43290 arabhdopsis Q9spc7 brassica na O9enc4 brassica na	Q9spc0 brassica ca Q9spc1 brassica ol Q9spc5 brassica na Q93cd1 staphylococ Q8rzq0 oryza sativ	QgigeĞ drosophila QBw2i3 setaria ita QBbnes mus musculu QBx2q4 escherichia QBzuq0 pyrobaculum	Q9azlő bacteriopha Q38322 lactococcus Q9ci83 lactococcus Q8f4f7 leptospira Q8ckc3 yersinia pe	Ogawai beta vulgar QBug52 agrobacteri QBw2x0 oryza sativ QBh8x4 oryza sativ QBluc3 phrynocepha	Q22848 acenorandal Q22848 accophila Q97247 sulfolobus P73113 synechocyst Q99481 acropyrum p Q99215 streetococc	O96214 sulfolobus Ogkswo streptomyce Ogkswo streptomyce Ogkswo streptomyce Ogkdf1 chlorobium Ogydla aeropyrum p Oghipa thermoplasm Ogissa papilio gla	084362 chlamydia t 043987 letshmania 09fyr1 arabidopsis 065509 barmah fore 092779 rhizobium m 09556 pan troglod 098190 rhizobium l 098199 thermoplas	Qyacyo coluina tu Qyareo nicotiana tu Qyareo nicotiana tu Qyayo deinococcus Qyayo deinococcus Qyanuré corynebacte Qwary homo sapten Qwary peeudomonas
6 2.2 85 12 6 2.2 85 12 6 2.2 85 12 6 6 2.2 85 12 6 6 2.2 85 12 8 85 12 8 85 12 8 85 12 8 8 5	6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	6 2.2 85 16 6 2.2 85 16 6 2.2 85 16 6 2.2 85 16 6 2.2 87 10 6 2.2 87 10	6 2.2 87 10 6 2.2 87 10 6 2.2 87 10 6 2.2 87 10 7 10 8 10	6 2.2 89 10 6 2.2 89 10 6 2.2 89 10 6 2.2 90 2 6 2.2 90 2	6 2.2 92 5 6 2.2 92 10 6 2.2 92 11 6 2.2 92 11 6 2.2 92 14 17	6 2.2 95 9 6 2.2 95 9 6 2.2 95 16 6 2.2 96 16 6 2.2 96 16	6 2.2 98 10 6 2.2 99 16 6 2.2 100 10 6 2.2 101 8 6 2.2 102 8	6 2.2 103 5 6 2.2 103 17 6 2.2 103 17 6 2.2 103 17 6 2.2 104 16 6 2.2 104 16 6 2.2 104 16	6 6 2 2 2 1 105 1 7 6 6 6 6 6 6 7 7 1 1 7 1 7 1 7 1 7 1	512 6 2.2 110 16 084362 513 6 2.2 112 10 04387 514 6 2.2 112 10 05509 515 6 2.2 112 10 05509 516 6 2.2 113 16 092N79 517 6 2.2 114 16 092KG 518 6 2.2 114 10 0941G9 520 6 2.2 115 17 0941G9	6 2.2 118 12 6 2.2 118 12 6 2.2 118 12 6 2 2.2 118 16 6 2 2.2 118 16 6 6 2 2.2 119 16 6 6 2 2.2 119 16 16
Q9qk99 rift valley Q9qk98 rift valley Q9qk95 rift valley Q9qk88 rift valley	COGRES TIET VALLEY	Q9J111 1 Q9zzv8 86 Q8if31 t1 Q20909 C6 Q8u565 66	Q93jio streptomyce Q93jio streptomyce Q8xd8f garlic late Q8xda thermoanaer Q9xiz7 oryza sativ	Q31588 salmo salar Q31582 salmo salar Q31587 salmo salar Q31581 salmo salar Q31580 salmo salar	031578 salmo salar 031583 salmo salar 089782 thermus the 089515 home sapien 080017 methanosarc	Ogael4 acetobacter Ogixyo homo sapien Ogikzxe mus musculu Ogbb75 mus musculu	Q8xxii8 rabistonia s Q56009 synethococc Q8d5y4 vibrio vuln Q8xx41 hordeum vul Q8xx41 hordeum chi Q8xx43 hordeum chi	QBrx42 Nordeum mur QBrx43 hordeum spo QBrx48 hordeum bre QBry19 homo sapien QBrx46 hordeum bul QBrx46 hordeum bul QBrx47 hordeum iuh	Q8rx45 hordeum bul Q8rx45 hordeum bul Q9bxu4 agrobacteri Q42023 arabidopsis Q8qv22 avian recovi Q8qv33 avian recovi Q9BD02 thizobium l	Q8pies manchonds Q8dfy3 vibrio vuln Q9fxy vibrio vuln Q95hx8 salmo salar Q95hx5 salmo salar Q95hx5 salmo salar Q95hx5 salmo salar Q95hx8 salmo salar	Q95hx5 salmo salar Q95hx6 salmo salar Q95is5 salmo salar Q9ay2 brassica ol Q9spc2 brassica ol Q84997 porcine rep Q84986 porcine rep
2.2 2.2 47 12 2.2 47 12 2.2 47 12 6.7 12 7.1 12	2.2 2.2 2.2 2.2 2.3 4.7 1.2 2.3 4.7 1.2 3.3 4.7 1.2 4.7 1.2 4.7 1.2 4.7 1.2 4.7 1.2 4.7 1.2 4.7 1.2 4.7 1.2 4.7 1.2 4.7 1.2 4.7 1.2 4.7 1.2 4.7 1.2 4.7 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2.2 2.2 2.2 2.2 64 112 2.2 65 16	22.22.22.22.22.22.22.22.22.22.22.22.22.	2.2 67 7 2.2 67 7 2.2 68 2 2.2 68 4 2.2 69 4	2.2 71 2 2.2 71 4 2.2 71 11 2.2 71 11 2.2 71 11 2.2 72 16	2.2 73 16 2.2 75 2 2.2 77 10 2.2 77 10 2.2 77 10	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	22.22.22.22.22.22.22.22.22.22.22.22.22.	6 2.2 84 16 080186 6 2.2 84 16 080173 6 2.2 85 7 095180 6 2.2 85 7 095186 6 2.2 85 7 095185 6 2.2 85 7 095188 6 2.2 85 7 095188	2.2 2.2 2.2 2.2 2.2 2.2 85 10 2.2 85 12 12 12 12 13

ė\$

+	J
C	١.
4	ď
ĭ	7
•	:
,	Š
١	יי על
•	'n
•	!
_	1
7)
	•
c	1
1	
a	ŝ
α	•
_	á
σ	Ċ
٠,	•
7	,
7	•
	,
•	
σ	١
¢)
0	
9	1
=	Š
	-

Q99/d79 aeropyrum p Q9fui9 rubus idaeu Q8da27 streptococc Q8kve3 renibacteri Q9kve3 renibacteri Q9xve3 renibacteri Q9xpu eropyrum p Q9yqu6 aeropyrum p Q9yqu8 aeropyrum p Q9yka3 anabaena sp Q8yka3 anabaena sp Q8583 pyrococcus Q33929 stappylococ	Ogicae arabidopsis Ogicae arabidopsis Ogeae oryza eativ Ogicij zarabidopsis Ogicij zarabido Ogicij zarabido Ogicij zarabido Ogicij zarabido Ogicij zarabido Ogicij zarabido Ogicij zarabidore	Q65516 barman fore Q65516 barman fore Q65413 streptococc Q22586 caenorhabdi Q65524 barman fore Q41146 paramecium Q8tv53 methanopyru Q9aew2 pseudomonas Q9gnf3 leishmania Q9gnf3 leishmania Q65519 barmah fore Q8519 barmah fore Q81081 lychnis rin Q8522 barmah fore Q83081 lychnis rin Q83081 lychnis rin Q83093 microsculum Q93548 microsculum Q93548 mus musculu Q65523 barmah fore Q83699 mus musculu	Q96503 barmah fore Q96503 barmah fore Q964128 home sapien Q9847 naeqleria g G65941 escherichia g G65941 escherichia g G65518 barmah fore Q88x62 escherichia Q98x62 escherichia Q98x62 escherichia Q98x62 escherichia Q98x62 escherichia Q98x62 escherichia Q98x62 escherichia Q9864 bifidobacte P9117 dugesia tig Q9654 bifidobacte P9177 dugesia tig Q9654 bifidobacte Q96551 barmah fore Q65501 barmah fore Q65502 barmah fore
130 17 Q9YD79 132 10 Q9FU19 133 2 Q8KVS3 133 2 Q8KVS2 133 16 Q9ZZZ1 133 17 Q9YDU6 133 17 Q9YDU6 134 16 Q8YKA3 134 17 Q58583 136 10 Q9FX60	•		146 12 065503 146 12 095831 147 16 088TG9 148 4 09H1Z8 148 16 065941 149 16 065941 149 11 088NE8 149 12 065518 150 2 08KR62 150 16 09AAK2 150 16 09AAK2 150 16 09AK6 151 5 991717 152 10 09FE54 152 10 09FE54 153 10 09FE34 153 10 09FE34 153 10 09FE34 153 10 09FE34 153 10 09FE34 153 12 065501 153 12 065501 153 12 065501 153 12 065501 153 12 065501
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Q8u0no pyrococcus Q8hy50 oryctolagus Q9at96 brassica ca Q8c8d4 mus musculu Q67426 dengue viru Q8ud03 agrobacteri Q95sm4 drosophila Q94105 mus musculu Q8gq77 pseudomonas Q91vR arabidopsis Q9txR arabidopsis Q9txR arabidopsis	Upgaza neusaeria m Q99215 neusaeria m Q98215 anterococc Q986w0 streptococc Q980m4 mechanosarc Q97wy5 sulfolobus P94825 helicobacte Q91bb3 plasmodium Q91125 staphylococ Q9fzf5 arabhidopais Q960g0 staphylococ Q97rv8 streptococc Q97rv8 streptococc Q97v8 streptococc Q97v8 streptococc Q931u3 helicobacte Q86dm7 streptococc Q43202 triticum ae Q42832 hordeum vul Q43303 g1ycine max	medicano vibrio v vibrio v vibrio v methanob mus masc mus musc porcine porcine porcine porcine porcine porcine	
2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2	6 2.2 128 12 085023 6 2.2 128 12 057005 6 2.2 128 12 031H97 6 2.2 128 12 031H97 6 2.2 128 12 039H97 6 2.2 128 12 090PB6 6 2.2 128 12 091H95 6 2.2 128 12 091H95 6 2.2 128 12 091H94 6 2.2 128 12 091H95 6 2.2 128 12 091H94 6 2.2 128 12 08BDR8 6 2.2 128 12 08BDR8
50 50 50 50 50 50 50 50 50 50 50 50 50 5	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	50 50 50 50 50 50 50 50 50 50 50 50 50 5	57.76 57.76

O32078 bacillus su Q9am04 staphylococ Q91c46 staphylococ Q9sdis staphylococ Q9su7 staphylococ Q85988 sphingomona Q07092 escherichia Q97095 thermoplasm O46881 carboxydoth	0.65217 drosophila 0.59338 desulfovibr 0.99m52 vibrio chol 0.91539 pseudomonas 0.9573 arabidopsis 0.9783 arabidopsis 0.9783 arabidobus 0.9994 xylella fas 0.9994 xylella fas 0.8715 yersinia pe 0.8715 salmonalla 0.60615 homo sapien	093722 pyrobaculum 099962 caenorhabdi 0999616 human immun 099e16 human immun 099e17 rhizobium 1 080161 yersinia pe 080762 salmonella 08062 salmonella 08062 raninoides 087x32 ralistonia s 081x32 ralistonia s 081x92 raninoides 081x92 ralistonia s 081x92 ralistonia s 081x92 ralistonia s 081x92 ralistonia s 091x92 homo sapien 091x92 homo sapien 091x92 salmonella	Q03729 hepatitis c Q03729 hepatitis c Q08727 anbabens ap Q8Ker4 fusobacteri Q8Ker4 chlorobium Q05584 actinobacil Q05584 actinobacil Q05653 actinobacil Q05653 actinobacil Q05653 actinobacil Q08457 agrobacteri Q8Ma95 homo sapien Q9745 streptococc Q84617 streptococc Q84617 streptococc Q84617 streptococc Q84617 streptococc Q84617 streptococc Q84618 streptococcl	086545 streptomyce 096542 arabidopsis 060965 leishmania 060414 human immun 09h142 bseudomonas 09898 rhizobium 1 081106 plasmodium 08062 lettuce mos 09a052 caulobacter 08463 legionella 091958 clostridium 094958 clostridium 094958 clostridium 094911 homo sapien
162 163 163 163 163 163 163 164 164 174 174 174 174 174 174 174 174 174 17	22 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	22 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2.2 178 12 003729 2.2 179 16 08FER4 2.2 179 16 08FER4 2.2 180 2 09FHL6 2.2 180 2 09FHL6 2.2 180 2 065283 2.2 180 16 08VJ7 2.2 180 16 08VJ7 2.2 181 16 08VJ7 2.2 181 16 09FR45 2.2 181 16 09FR45 2.2 182 10 09FR45 2.2 183 16 09FR45 2.2 184 8 Q8INOS 2.2 185 16 08FR7 2.3 185 16 08FR7 2.3 185 16 08FR7 2.4 185 16 08FR7 2.5 185 16 08FR7 2.7 185 16 08FR8 2.7 185 185 185 185 185 185 185 185 185 185	22 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
	777 788 788 788 788 788 788 788 788 788	,	7 7 88 7 7 88 7 7 88 7 7 88 8 8 8 8 8 8	
acteriopha lepatitis lepatitis lepatitis lepatitis lepatitis lepatitis	répatitis répatitis répatitis répatitis répatitis répatitis répatitis répatitis répatitis répatitis	094949 hepatitis composed to the composed to t	Oggqqq hepatitis c Ogqqq hepatitis c Og1659 hepatitis c Og1679 hepatitis c Og1679 hepatitis c Og1679 hepatitis c Og1679 hepatitis c Og1679 hepatitis c Og1676 hepatitis c Og1676 hepatitis c Og1676 hepatitis c Og1670 hepatitis c Og170	Q44150 anabaena sp Q65515 barmah fore Q65513 barmah fore Q65513 barmah fore Q65514 barmah fore Q65514 barmah fore Q65514 barmah fore Q65510 barmah fore Q65510 barmah fore Q65510 parmah
444444444 90000000000000000000000000000	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	154 12 080014 154 12 080014 154 12 091683 154 12 091683 154 12 091683 154 12 091688 154 12 091688 154 12 091698 154 12 091605 154 10 091706 156 10 091706 156 10 091706 158 10 09477	661 100 100 100 100 100 100 100 100 100
	. พ.			เล่นผลผลผลผลผลผลผล

Q8f6e9 leptospira Q8mut9 aplysia cal Q91gq1 oryza sativ Q9ye48 aeropyxum p Q8ulx9 pyrococcus Q9vx73 mus musculu Q9wxy0 thermotoga Q9wxy0 thermotoga Q8msq0 corynebacte Q9msq1 halobacteri Q8msq1 cavia tschu Q8f3 cyanophaga Q8ms2 cyanophaga Q95nt6 cavia tschu Q9f1428 arabidopsis Q9txt5 caenorhabdi Q9ftw4 arabidopsis Q9ftw5 halobacteri Q8fu23 branchiosto Q9ftx7 chauliognat Q9fty7 chauliognat Q9fty8 arabidopsis Q9fty13 escherichia Q9fty10 arabidopsis Q8fty4 xanthomonas Q8fty4 xanthomonas Q8fty4 xanthomonas Q8fty4 santhomonas Q8fty6 escherichia Q9fty1 deinococcus Q8dx08 streptococc Q8dx01 streptococc Q8dx01 streptococc Q8dx01 streptococc Q8dx08 streptococc Q8dx01 streptococc	Q9v5b4 drosophila Q8r345 mus musculu Q8dv89 streptococc Q98311 molluscum c Q985f4 eimeria sep Q95f64 eimeria sep Q95f64 eimeria sep Q9f720 rhizobium m Q91r02 arabidopsis Q9yhw7 gallus gall Q97xx2 sulfolobus Q8yjx2 sulfolobus Q8yjx2 sulfolobus Q8yjx3 ovyza sativ Q99jr7 mus musculu C59452 pyrococcus Q8vy5 ovyza sativ Q99jr7 mus musculu C59fx2 arabidopsis Q9fx2 pyrococcus Q8xve9 pyrobaculum Q9bpv9 homo sapien Q9fx2 homo sapien Q9fx2 mus musculu Q96sg homo sapien Q9fx3 mus musculu Q96sg nickettsia Q6s993 chlorobium
893 6 2.2 218 16 Q8FEE9 894 6 2.2 219 5 Q9LGQ1 895 6 2.2 219 10 Q9LGQ1 899 6 2.2 219 17 Q9VE48 899 6 2.2 219 17 Q9VE48 899 6 2.2 220 16 Q9WXYO 900 6 2.2 220 16 Q9WXYO 901 6 2.2 221 9 Q8WZO 902 6 2.2 221 1 Q9SVE4 903 6 2.2 221 1 Q9SVE4 904 6 2.2 221 1 Q9SVE4 905 6 2.2 222 1 Q0YOVI 909 6 2.2 222 1 Q0YOVI 909 6 2.2 222 1 QOYOVI 913 6 2.2 224 1 QOYOVI 914 6 2.2 224 1 QOYOVI 915 6 2.2 224 1 QOYOVI 916 6 2.2 224 1 QOYOVI 917 6 2.2 224 1 QOYOVI 918 6 2.2 224 1 QOYOVI 919 6 2.2 224 1 QOYOVI 919 6 2.2 224 1 QOYOVI 910 6 2.2 224 1 QOYOVI 911 6 2.2 225 1 QOYOVI 912 6 2.2 225 1 QOYOVI 913 6 2.2 225 1 QOYOVI 924 6 2.2 225 1 QOYOVI 925 6 2.2 228 1 QOYOVI 926 6 2.2 228 1 QOYOVI 927 6 2.2 228 1 QOYOVI 928 6 2.2 229 1 QOYOVI 939 95 95 95 95 95 95 95 95 95 95 95 95 95	6 6 2.2 232 5 6 6 2.2 232 11 6 6 2.2 232 11 6 6 2.2 233 12 6 6 2.2 233 12 6 6 2.2 233 12 6 6 2.2 233 16 6 6 2.2 233 16 6 6 2.2 233 11 6 6 2.2 233 11 7 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
Q96h36 homo sapien Q9azm3 bacteriopha Q8w740 bacteriopha Q9rd195 lactococcus Q9rd205 lactococcus Q9rd205 lactococcus Q9rd205 lactococcus Q9rd205 lactococcus Q9rd305 bacillus ha Q9rd55 bacillus ha Q9rd55 bacillus ha Q9rd56 bacillus ha Q9rd679 vibrio vuln Q9rd68 versinia pe Q9rd92 ureaplasma Q9rd92 ureaplasma Q9rd92 ureaplasma Q9rd96 homo sapien Q9rd10 choanomphal Q9rd09 choanomphal Q9rd00 choanomphal Q9rd00 pseudomonas Q9rd00 mus musculu Q9rd000 mus musculu Q9rd000 mus musculu Q9rd000 mus musculu Q9rd0000 mus musculu Q9rd000000000000000000000000000000000000	
6 2.2 195 4 Q96H36 6 2.2 195 9 Q9AZM3 6 2.2 195 16 Q9AZM3 6 2.2 195 16 Q9C195 6 2.2 195 16 Q9C195 6 2.2 195 16 Q9C195 6 2.2 195 17 Q9AZM1 6 2.2 196 19 Q9AZM1 6 2.2 196 19 Q9AZM1 6 2.2 2 196 19 Q9CC 6 2.2 2 201 2 Q9CC 6 2.2 2 201 2 Q9CC 6 2.2 2 201 10 Q9CC 6 2.2 2 202 10 Q9CC 6 2.2 2 203 10 Q9CC 6 2.2 2 204 2 Q9CC 6 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	88888888888888888888888888888888888888

```
Q40590
Q40590;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             050038
  Matches
                                                                                                                                                                                                                        RESULT 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 3
                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        В
                                                                          Db
                                                                                                                      à
                                                                                                                                                         g
                                                       011fp2 arabidopsis
011fp2 arabidopsis
08xu43 ralstonia s
08xxk6 streptomyce
09xkbs bacillus ha
09clg8 pasteurella
09clg8 pasteurella
09clg8 pasteurella
09clg8 narioanalla
08ch0 accharcomyc
001888 accharcomyc
001888 accharcomyc
001888 sacharcomyc
011888 sacharc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                094KL7 PRELIMINARY; PRT; 277 AA.
094KL7
01-DEC-2001 (TERMELrel. 19, Created)
01-DEC-2001 (TERMELrel. 19, Last sequence update)
01-DEC-2003 (TERMELrel. 23, Last annotation update)
Stem secoisolariciresinol dehydrogenase (Fragment).
Forsythia intermedia (Border forsythia).
Forsythia intermedia (Border forsythia).
Spermatophyta; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Asteridae; lamiids, Lamiales; Oleaceae; Forsythia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ALIGNMENTS
                                                                               Q84674
Q8XU43
Q9EXK6
Q9CLG8
Q9CLG8
Q8ZKK9
Q9CEG9
Q9ECG9
Q8ZKS
Q9ECG9
Q8ZMS6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Q8K628
Q8ZFT5
Q8FJU6
Q8ETD2
Q8EAW5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Q8X815
Q8NZN2
                                                                                                                                                                                                                                                                                                                             Q8H8U5
Q9RZ49
Q99YD6
Q97Q07
Q8ZQV6
Q8ZBD9
Q8X9C8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Q31591
Q8M0C9
                                                                                                                                                                                                                                                                                                                             RESULT 1
1094K
0944K
10 094K
094K
01-DD
01
```

40.3%; Score 110; DB 10; Length 277; 100.0%; Pred. No. 1.3e-110;

Query Match Best Local Similarity

PRUSALE, ...
Audioreductase.
NON_TER 277 277
CPONTENCE 277 AA; 29256 MW; 98885C210CAFE2EB CRC64;

```
ö
                                                                                   8 ARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTYIHC 67
                                                                                                                                                                      71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A.
STRAIN=cv. Perite Havana SR-1;
MEDLINE=95004656; PubMed=720706;
MEDLINE=95004656; PubMed=720706;
MEDLINE=95004656; PubMed=720706;
"A cis-acting element and a trans-acting factor involved in the wound-induced expression of a horseradish peroxidase gene.";
plant J. 6:87-97(1994).
-!-SIMILARITY; BELONGS TO THE SHORT-CHAIN DEHYDROGENASES/REDUCTASES
                                                                                                                                                 12 ARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTYIHC
0; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           01-JUN-1998 (TrEMBLrel. 06, Created)
01-JUN-1998 (TrEMBLrel. 06, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
SCANT.
Nicotiana tabacum (Common tobacco).
Nicotiana tabacum (Common tobacco).
Stararyota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Asteridae, lamiide, Solanales; Solanaceae; Nicotiana.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              01-NOV-1996 (TrEMBLrel. 01, Created)
01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
01-DEC-2001 (TrEMBLrel. 19, Last annotation update)
TFHP-1 protein.
Nicotiana tabacum (Common tobacco).
Nicotiana tabacum (Common tobacco).
Sukaryota, Viridiplantae, Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots;
Asteridae, lamiids; Solanales; Solanaceae; Nicotiana.
                                                                                                                                                                                                                                                                   .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match 6.2%; Score 17; DB 10; Length 234; Best Local Similarity 100.0%; Pred. No. 1.4e-09; Matches 17; Conservative 0; Mismatches 0; Indels
0, Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Moenke G.;
Submitted (DEC-1997) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Oxidoreductase.
SEQUENCE 234 AA; 25078 MW; F10BD4E0FF97940A CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TISSUE=Leaf;
MEDLINE=96145513; PubMed=8555446;
MEDERS K., Moenke G., Badur R., Sonnewald U.;
0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (SDR) FAMILY.
BRNBL, D29976, BAA06241.1;
InterPro; IPR002198; ADH short.
Pfam; PF00106; adh_short; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         10 RLEGKVALITGGASGIG 26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  13 RLEGKVALITGGASGIG 29
110; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A. TISSUE=Leaf;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Moenke G.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 HERE REPAREMENT OF THE PROPERTY OF THE PROPERT
```

```
EMBL; AY052216; AAK97686.1; -. InterPro; IPR002198; ADH short. Pfam; PF00106; adh short; 1. PRINTS; PR00080; SDRFAMILY.
                   18 LEGKVALITGGASGIG 33
 11 LEGKVALITGGASGIG 26
                                                                                                                                                                                                                                                                                                                                                                                                                 "Arabidopsis cDNA clones.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        11 LEGKVALITGGASG 24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          41 LEGKVALITGGASG 54
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           14; Conservative
                                                                                                    PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            [1]
SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                             (SDR) FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NCBI_TaxID=3702;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STRAIN=Columbia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                STRAIN=Columbia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Oxidoreductase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Nakamura Y.;
                                                                                                                                                                                                                                                                                                                                                                                                   Ecker J.R.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
                                                                                                    Q941E4
Q941E4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              09LW34;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Q9LW34
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Q9LW34
                                                                                                      ò
                         g
   ઠે
                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           .;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Spiegel L.A., Huang E.N., Nascimento L.U., de la Bastide M., Vil D.M., Preston R.R., Matero A., Shah R., O'Shaughnessy A., Rodriguez M., Shekher M., Schutz K., See L.H., Swaby I., Habermann K., Dedhia N.N., Mewes H.W., Lemcke K., Mayer K.F.X.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Putative alcohol dehydrogenase.
F4C21.6 OR AT4003140.
Arabidopsis thaliana (Mouse-ear cress).
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae; eurosids II; Brassicales; Brassicaceae; Arabidopsis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EU Arabidopsis sequencing project;
Submitted (MAR-2000) to the EMBL/GenBank/DDBJ databases.
-!- SIMILARITY: BELONGS TO THE SHORT-CHAIN DEHYDROGENASES/REDUCTASES
(SDR) FAMILY.
          photoassimilate responding genes: isolation of cDNAs encoding a new class of pathogenesis-related proteins.";
Plant Mol. Biol. 29:1027-1038(1995).
-!- SIMILARITY: BELONGS TO THE SHORT-CHAIN DEHYDROGENASES/REDUCTASES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   "Arabidopsis thaliana BAC F4C21 from chromosome IV near 17 cM."; Submitted (FEB-1999) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Habermann K., de la Bastide M., Huang B.N., Gnoj L., Schutz K.,
Preston R., Calma C., Martienssen R., Parnell L.D., Dedhia N.,
McCombie W.R.;
                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ö
"A simplified procedure for the subtractive cDNA cloning of
                                                                                                                                                                                                                                    Length 284;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 283;
                                                                                                                                                                                                                                 Query Match 6.2%; Score 17; DB 10; Length 28 Best Local Similarity 100.0%; Pred. No. 1.6e-09; Matches 17; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mewes H.w., Lemcke K., Mayer K.F.X.;
Submitted (MAR-2000) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                      284 AA; 29819 MW; BD884E9013FB63E9 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              283 AA; 29994 MW; 93B0A97CECC859BC CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                          01-MAY-1999 (TrEMBLrel. 10, Created)
01-MAY-1999 (TrEMBLrel. 10, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match 5.9%; Score 16; DB 10; Best Local Similarity 100.0%; Pred. No. 2e-08; Matches 16; Conservative 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                  PRT;
                                                                                                                          InterPro; IPR002198; ADH short.
Pfam; PF00106; adh short; 1.
PRINTS; PR00080; SDRFAMILY.
PROSITE; PS00061; ADH SHORT; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   InterPro; IPR002198; ADH short.
Pfam; PF00106; adh short; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PS00061; ADH_SHORT; 1.
                                                                                  EMBL, AJ223178; CAA11154.1; -. EMBL, AJ223177; CAA11153.1; -. HSSP; P19992; 1HDC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EMBL; AC005275; AAD14442.1; -. EMBL; AL161496; CAB77799.1; -.
                                                                                                                                                                                                                                                                                                              10 RLEGKVALITGGASGIG 26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRINTS; PR00080; SDRFAMILY
PROSITE; PS00061; ADH SHORT
                                                                                                                                                                                                                                                                                                                                                                                               PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        HSSP; P19992; 1HDC
                                                                       (SDR) FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NCBI_TaxID=3702;
                                                                                                                                                                                       Oxidoreductase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Oxidoreductase
                                                                                                                                                                                                       SEQUENCE
                                                                                                                                                                                                                                                                                                                        13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                  Q9ZR17
                                                                                                                                                                                                                                                                                                                                                                                  09 ZR17
à
```

```
Cheuk R., Chen H., Kim C.J., Koesema E., Meyers M.C., Banh J.,
Cheuk R., Chen H., Kim C.J., Koesema E., Meyers M.C., Banh J.,
Bowser L., Carninci P., Dale J. M., Goldsmith A.D., Hayashizaki Y.,
Ishida J., Jiang P.X., Jones T., Kamiya A., Karlin-Neumann G.,
Kawai J., Lam B., Lee J.M., Lin J., Liu S.X., Miranda M., Narusaka M.,
Nguyen M., Onodera C.S., Palm C.J., Pham P.K., Quach H.L., Sakurai T.,
Satou M., Seki M., Southwick A., Tang C.C., Toriumi M., Yamada K.,
Yamamura Y., Yu G., Yu S., Shinozaki K., Davis R.W., Theologis A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    "Structural analysis of Arabidopsis thaliana chromosome 3. I. Sequence features of the regions of 4,504,864 bp covered by sixty Pl and TAC
                                                                                                         AT326770/MDJ14 21.
Arabidopsis thaliana (Mouse-ear cress).
Bukaryots, Viridiplantes, Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae;
eurosida II; Brassicales; Brassicaceae; Arabidopsis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             01-0CT-2000 (TrEMBLrel. 15, Created)
01-0CT-2000 (TrEMBLrel. 15, Last sequence update)
01-0CT-2003 (TrEMBLrel. 13, Last annotation update)
Alcohol dehydrogense-like protein (At3g26770/MDJ14_21).
Arabidopsis thaliana (Mouse-ear cress).
Bukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae; eurosids II; Exassicales; Brassicaceae; Arabidopsis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Submitted (AUG-2001) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sato S., Nakamura Y., Kaneko T., Kato T., Asamizu E., Tabata S.; Submitted (AUG-1998) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ó
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        5.1%; Score 14; DB 10; Length 306; 100.0%; Pred. No. 3.2e-06;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        306 AA; 31795 MW; C1816892BF71B537 CRC64;
                                           01-DEC-2001 (TrEMBLrel. 19, Created)
01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
306 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  306 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      100.0%; Pred. w.
PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINE=20277480; PubMed=10819329;
```

ô

274 AA.

PRT;

```
Phiseolus lunatus (Lima bean) (Phaseolus limensis).
Bukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae;
eurosida I; Fabales; Fabaceae; Papilionoideae; Phaseoleae; Phaseolus.
NCBI_TaxID=3884;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        01-0CT-2002 (TrEMBLrel. 22, Created)
01-0CT-2002 (TrEMBLrel. 22, Last sequence update)
01-0CT-2003 (TrEMBLrel. 23, Last sequence update)
01-0AR-2003 (TrEMBLrel. 23, Last annotation update)
01343_D04.14 protein (P0453B03.33 protein).
017343_D04.14 or P0453B03.33.
0ryza sativa (japonica cultivar-group).
Bukaryota, Viridiplantae, Streptophyta, Embryophyta, Fracheophyta,
Ehrhartoideae, Oryzeae, Oryza.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A.

Micricoli J., Arimura G., Ozawa R., Murci A., Takabayashi J., Nishioka T.,

Nishioka T.,

Subhaseolus lunatus ",

Submitted (JUN-2002) to the EMBL/GenBank/DDBJ databases.

EMBL, AB086038 BACS3872.1,

SEQUENCE 274 AA; 28862 MW; DEC858BDB324877F CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Match
Local Similarity 100.0%; Pred. No. 3.5e-05;
es 13; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                        Created)
Last sequence update)
Last annotation update)
                                                                                                                                                                   01-MAR-2003 (TrEMBLrel. 23,
01-MAR-2003 (TrEMBLrel. 23,
01-MAR-2003 (TrEMBLrel. 23,
Alcohol dehydroge.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               177 AVELGQFGIRVNC 189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   178 AVELGOFGIRVNC 190
                                                                                               PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         QBLID4
QBLID4;
                                                                                          овнор9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Best Loca
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 9

108 L104

108 L104

109 L104

101 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 01 -0 0
                  RESULT 8
                                                                                               δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   П
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ö
                                                                                                                                                                                                                                                                                                                                                н.с.,
                                                                                                                                                                                                                                                                                                                                                                                                                             01-MAY.1997 (TrEMBLrel. 03, Created)
01-MAY.1997 (TrEMBLrel. 03, Last sequence update)
01-MAY.1997 (TrEMBLrel. 22, Last sequence update)
CPRD12 protein.
Vigna unguiculata (Cowpea).
Vigna unguiculata (Cowpea).
Spermatophyta; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae;
eurosids I; Fabales; Fabaceae; Papilionoideae; Phaseoleae; Vigna.
NCBI_TaxID=3917,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE FROM N.A.

Undi S., Yamaguchi.-Shinozaki K., Urao T., Shinozaki K.;

"Characterization of two cDNAs for novel drought-inducible genes in
the highly drought-tolerant cowpea.",
J. Plant Res. 109:415-42(1996).
-!- SIMILARITY: BELONGS TO THE SHORT-CHAIN DEHYDROGENASES/REDUCTASES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                               Cheuk R., Chen H., Kim C.J., Shinn P., Bowser L., Carninci P., Chan M.M., Chang C.H., Dale J.M., Deng J.M., Hayashizaki Y., Hayashizaki Y., Hanan W.W., Ishida J., Jones T., Kamiya A., Karlin-Nemann G., Kawai J., Lam B., Lee J.M., Lin J., Miranda M., Narusaka M., Nguyen M., Palm C.J., Quach H.L., Sakurai T., Satou M., Seki M., Southwick A., Tang C.C., Toriumi M., Wallender E.K., Wong C., Wu Yamada K., Yu G., Yuan S., Shinozaki K., Davis R.W., Theologis A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ,
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 14; DB 10; Length 306;
Pred. No. 3.2e-06;
0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            4.8%; Score 13; DB 10; Length 267;
100.0%; Pred. No. 3.4e-05;
ive 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8E87A72D081266EB CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEOUENCE 267 AA; 28484 MW; 8C4A48A2E9F41B64 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (SDR) FAMILY.

EMBL, D88121; BAA13541.1; -.

HSSP, P19992; 1HDC.

InterPro; IPR002199; ADH short.

PETM, PR00106; adh short; 1.

PRINTS; PR00106; SIRFAMILY.

PROSITE; PS00061; ADH_SHORT; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Match 5.1%; Soc
Local Similarity 100.0%; Pi
les 14; Conservative 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Oxidoreductase.
SEQUENCE 306 AA; 31783 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PF00106; adh short; 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            41 LEGKVALITGGASG 54
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          11 LEGKVALITGGASG 24
    clones.";
DNA Res. 7:131-135(2000).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         177 AVELGOFGIRVNC 189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           178 AVELGQFGIRVNC 190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Local Similarity 100.
les 13; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRELIMINARY;
                                                                                                             SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pfam; PF(
PRINTS; 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local S
Matches 13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               P93697
P93697;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Best Loca
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 7
193697
101-M
DT 01-M
DT 01-M
DT 01-M
DT 01-M
DT 01-M
DT 01-M
DE CPRD:
RTH RELEASE READER READ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
```

321 AA

PRT;

ö

ó,

Length 274;

```
SEQUENCE FROM N.A.

STRAIN=cv. Nipponbare;

STRAIN=cv. Nipponbare;

Sasaki T., Matsumoto T., Katayose Y.;

"Oryza sativa nipponbare(GA3) genomic DNA, chromosome 7, PAC

clone:P0453E03...;

slubmitted (JUN-2002) to the EMBL/GenBank/DDBJ databases.

-!-SIMILARITY: BELONGS TO THE SHORT-CHAIN DEHYDROGENASES/REDUCTASES

EMBL, AP003425; BAC10093.1;

EMBL, AP003425; BAC22441.1;

Gramene; QBLID4; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 10; Length 321; 4.1e-05;
SEQUENCE FROM N.A.
STRALM-ECV. Nipponbare;
Saraki T., Mateumoto T., Yamamoto K.;
"Oryza astiva nipponbare (GA3) genomic DNA, chromosome 7,
clone:041343 D04".
Submitted (JUL-2001) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  321 AA; 34337 MW; 3DB5EC4726D98AA2 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     4.8%; Score 13; 100.0%; Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gramene; QBLID4;
InterPro; IFRO02198; ADH short.
Pfam; PF00106; abh short; I.
PRINTS; PR0080; SDRFAMILY.
SEQUENCE 321 AA; 34337 MW; 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local Similarity
```

ö

Gaps

.; 0

셤

ò

```
.
Kowyama Y., Kadota N., Sassa H., Kakeda K., Tsuchiya T., Ishimizu T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Kowyama Y., Kadota N., Sassa H., Kakeda K., Tsuchiya T., Ishimizu T., Kondo K., Norioka S.;
"S-locus specific stigma protein (SSP) from sporophytic self-incompatibility plant, Ipomoea trifida, is a member of short-chain slochol dehydrogenase family";
Submitted (JUN-1998) to the EMBL/GenBank/DDBJ databases.
-!- SIMILARITY: BELONGS TO THE SHORT-CHAIN DEHYDROGENASES/REDUCTASES
  "Characterization of promoter region of the SSP gene from Ipomoea trifida regulates stigma-specific expression."; Submitted (AUG-2001) to the EWBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Eukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta,
Spermatophyta, Magnoliophyta, eudicotyledons, core eudicots,
Asteridae, lamiids, Solanales, Convolvulaceae, Ipomoea.
                                                                                                                                                                                                                                                                                                                                                     4.4%; Score 12; DB 10; Length 277;
100.0%; Pred. No. 0.00043;
Live 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          4.4%; Score 12; DB-10; Length 277; 100.0%; Pred. No. 0.00043; tive 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                         277 AA; 29257 MW; A0CDB434B31C666D CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             277 AA; 29312 MW; 7A75BEF12A73D9AE CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         01-MAY-2000 (TrEMBLrel. 13, Created)
1-MAY-2000 (TrEMBLrel. 13, Last sequence update)
101-DEC-2001 (TrEMBLrel. 19, Last annotation update)
Short-chain alcohol dehydrogenase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           01-MAY-2000 (TrEMBLrel. 13, Created)
01-MAY-2000 (TrEMBLrel. 13, Last sequence update)
01-DEC-2001 (TrEMBLrel. 19, Last annotation update)
Short-chain alcohol dehydrogenase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          277 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 284 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRT;
                                                                                                                        EMBL, AF072449; AAC35342.1; EMBL, AB070221; BAB66916.1; HSSP; P19992; HDC. InterPro; IPR002198; ADH short. Pfam, PF00106; adh short; IPR01NTS; PR00080; SDRFAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (SDR) FAMILY.

EMBL; AF072448; AAC35341.1; -.

HSSP; P19992; 1HDC.

InterPro; IPR002198; ADH_short.

Pfam; PF00106; adh short; 1.

PRINTS; PR00080; SDRFAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         89 YGKLDIMFSNAG 100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             89 YGKLDIMFSNAG 100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local Similarity 100.
Matches 12; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                         86 YGKLDIMFSNAG 97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 86 YGKLDIMFSNAG 97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                  Local Similarity
les 12; Conserv
                                                                                                      (SDR) FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          [pomoea trifida
                                                                                                                                                                                                                                                                              Oxidoreductase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Oxidoreductase
SEQUENCE 277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Q9SBD6;
01-MAY-2000
                                                                                                                                                                                                                                                                                                         SEQUENCE
                                                                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       , 80BS 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Q9SBD8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              90BS60
                                                                                                                                                                                                                                                                                                                                                                                        Best Loca
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT 12
09SBD8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       908S60
     3844488
                                                                                                                                                                                                                                                                                                                                                                                                                                                               ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ö
     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Kowyama Y., Kadota N., Sassa H., Kakeda K., Tsuchiya T., Ishimizu T., Kondo K., Norioka S.;
"S-lous specific stigma protein (SSP) from sporophytic self-incompatibility plant, Ipomoea trifida, is a member of short-chain alcohol dehydrogenase family.";
Submitted (JUN-1998) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                STRAIN=H45-3;
TSUGINYA T., Suwabe K., Watase T., Kagaya Y., Kowyama Y.;
TSUGINYA T.,
Characterization of promoter region of the SSP gene from Ipomoea
trifida regulates stigma-specific expression.",
Submitted (AUG-2001) to the EMBL/GenBank/DDBJ databases.
-!- SIMILARITY: BELONGS TO THE SHORT-CHAIN DEHYDROGENASES/REDUCTASES
(SDR) FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                               Eukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta, Spermatophyta, Magnoliophyta, eudicotyledons, core eudicots, Asteridae, lamiids, Solanales, Convolvulaceae, Ipomoea.
VCBI_TaxID=35884,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Eukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta,
     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots;
Asteridae; lamiids; Solanales; Convolvulaceae; Ipomoea.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 160;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STRAIN=H77-2;
Tsuchiya T., Suwabe K., Watase T., Kagaya Y., Kowyama Y.;
     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   01-MAY-2000 (TrEMBLrel. 13, Last sequence update)
01-JUN-2002 (TrEMBLrel. 21, Last annotation update)
Short-chain alcohol dehydrogenase (S-locus linked stigma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       160 160
160 AA, 16817 MW; BAEBFB2727F12684 CRC64;
                                                                                                                                                                                                                                                                       01-UTN-2002 (TrEMBLrel. 21, Created)
01-UTN-2002 (TrEMBLrel. 21, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
S-locus linked stigma protein 1 (Fragment).
     ..
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        4.4%; Score 12; DB 10; L 100.0%; Pred. No. 0.00026; tive 0; Mismatches 0;
                                                                                                                                                                                                                                  160 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               277 AA
  Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            -MAY-2000 (TrEMBLrel. 13, Created)
                                                                                                                                                                                                                               PRT;
  ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EMBL; AB070220; BAB86915.1; -. InterPro; IRR001198; ADH short. Pfam; PF00106; adh_short; 1. Oxidoreductase.
                                                 235 AALYLASDEAKYV 247
                                                                                                 287 AALYLASDEAKYV 299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local Similarity 100..
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              13; Conservative
                                                                                                                                                                                                                            PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 86 YGKLDIMFSNAG 97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NCBI_TaxID=35884;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                protein).
SSP OR SSP10.
Ipomoea trifida.
                                                                                                                                                                                                                                                                                                                                                                                                       Ipomoea trifida.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NON TER
SEQUENCE
                                                                                                                                                                                                                                                       Q8S9B7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    09SBD7;
                                                                                                                                                                                                                            08S9B7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               09SBD7
                                                                                                                                                                        RESULT 10
08898
AC 08898
AC 08898
DT 01-JU
DT 01
  Matches
```

RESULT 11 **Q9SBD7**

g

ô

Gaps

; 0

```
RESULT 15
                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ó
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                 Kowyama Y., Kadora N., Sassa H., Kakeda K., Tsuchiya T., Ishimizu T., Kowyama Y., Norioka S.;

Komdo K., Norioka S.;

Komdo K., Norioka S.;

Ry Selection (SSP) from sporophytic self-
st. incompatibility plant. Ipomoca trifida, is a member of short-chain
RT incompatibility plant. Ipomoca trifida, is a member of short-chain
RT incompatibility plant. Ipomoca trifida, is a member of short-chain
RT incompatibility plant. Ipomoca trifida, is a member of short-chain
RT incompatibility plant. Ipomoca trifida, is a member of short-chain
RT incompatibility plant. Ipomoca trifida, is a member of short-chain
RT incompatibility plant. Ipomoca trifida, is a member of short-chain
RT incompatibility plant. Ipomoca trifida, is a member of short-chain
RM SRN incompatibility plant. Ipomoca incompatibility incompatibility incompatibility plant. Ipomoca incompatibility i
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.

SEQUENCE FROM N.A.

Kakeda K., Tsuchiya T., Ishimizu T.,

Kondo K., Norioka S.;

"S-locus specific stigma protein (SSP) from sporophytic self-
incompatibility plant, Ipomea trifida, is a member of short-chain
alcohol dehydrogense family.";

Submitted (JUN-1998) to the EMBL/GenBank/DDBJ databases.

-!- SIMILARITY: BELONGS TO THE SHORT-CHAIN DEHYDROGENASES/REDUCTASES
(SDR) FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0; Gaps
Ipomoea trifida.
Eukaryota, Viridiplantae; Streptophyta, Embryophyta, Tracheophyta,
Spermatophyta, Magnoliophyta; eudicotyledons; core eudicots;
Asteridae; lamids; Solanales; Convolvulaceae; Ipomoea.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Asteridae; lamiids; Solanales; Convolvulaceae; Ipomoea.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    .
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
4.4%; Score 12; DB 10; Length 284;
Best Local Similarity 100.0%; Pred. No. 0.00044;
Matches 12; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               4.4%; Score 12; DB 10; Length 284;
100.0%; Pred. No. 0.00044;
ive 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EMBL; AF072447; AAC35340.1; -.
HSSP; P19992; THDC.
InterPro; PR002198; ADH short.
Pfam; PF00106; adh_short; 1.
PRINTS; PR00080; SDRPAMILY.
Oxidoreductase.
SEQUENCE 284 AA; 29823 MW; 4C04A888178C0633 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      284 AA; 29898 MW; 2B54BFFBAD6BAE4A CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                01-NOV-1998 (TrEMBLrel. 08, Created)
01-NOV-1998 (TrEMBLrel. 08, Last sequence update)
01-NAR-2003 (TrEMBLrel. 23, Last annotation update)
Short-chain alcohol dehydrogenase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 284 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     89 YGKLDIMFSNAG 100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity 100.
Matches 12; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           86 YGKLDIMFSNAG 97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 86 YGKLDIMFSNAG 97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRELIMINARY;
                                                                                                                                                                                                                                         SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 082465
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 14
08246
10 08246
07 08246
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01-00
07 01
                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
```

89 YGKLDIMFSNAG 100

Оþ

ó

```
[1] SEQUENCE FROM N.A.
SEQUENCE FROM N.A.
SEQUENCE FROM N.A.
MEDIATE=2050789; PubMed=11055914;
MEDIATE=2050789; PubMed=11055914;
Enargar D., Cleveland T.E.;
Hadha in Appergillus parasiticus Is Involved in Conversion of 5'-
Hydroxyaverantin to Averwinin.";
Appl. Environ. Microbiol. 66:4715-4719(2000).

-- SIMILARITY: BELONGS TO THE SHORT-CHAIN DEHYDROGENASES/REDUCTASES
(SDR) FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                          Aspergillus parasiticus.

Aspergillus parasiticus.

Buraryota; Fungi, Ascomycota; Pezizomycotina; Eurotiomycetes;

Burotiales; Trichocomaceae; Aspergillus.

NCBL_TaxID=5067;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 278;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ouery Match
4.0%; Score 11; DB 3; Length 278
Best Local Similarity 100.0%; Pred. No. 0.0053;
Matches 11; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             278 AA; 29557 MW; 8C60C5437EB9BB71 CRC64;
                                                                                               01-JUJ-1997 (TrEMBLrel. 04, Created)
01-MAY-2000 (TrEMBLrel. 13, Last sequence update)
11-MAY-2003 (TrEMBLrel. 23, Last annotation update)
Short-chain alcohol dehydrogenase.
278 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     completed: October 23, 2003, 13:05:29
ne : 163 secs
PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EMBL; U76621, AAB51228.3; -Interpro; IRN002198; AbH short.
Pfam, PF00106; adh short; I.PROSITE; PROSITE; PROSIT
PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           16 ALITGGASGIG 26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    18 ALITGGASGIG 28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Oxidoreductase.
SEQUENCE 278
P87017
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Search cor
Job time
```

δ

```
WPI; 2000-126356/11.
N-PSDB; AAZ45730.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 24-APR-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              23-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       WO9955846-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          04-NOV-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              349.5
347.5
346.5
343.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Xia Z,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAY54412
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Secoisolariciresin
Secoisolariciresin
Secoisolariciresin
Secoisolariciresin
Secoisolariciresin
Herbicidally activ
Arabidopsis thalia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Secoisolariciresin
                                                                                                     1. No. is the number of results predicted by chance to have a
re greater than or equal to the score of the result being printed,
is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A Geneseq 19Jun03:*

| SIDSI/gcgdata/geneseq/geneseqp-embl/AA1980.DAT:*
| SIDSI/gcgdata/geneseq/geneseqp-embl/AA1981.DAT:*
| SIDSI/gcgdata/geneseq-geneseqp-embl/AA1981.DAT:*
| SIDSI/gcgdata/geneseq-geneseqp-embl/AA1981.DAT:*
| SIDSI/gcgdata/geneseq-geneseqp-embl/AA1981.DAT:*
| SIDSI/gcgdata/geneseq-geneseqp-embl/AA1985.DAT:*
| SIDSI/gcgdata/geneseq-geneseqp-embl/AA1986.DAT:*
| SIDSI/gcgdata/geneseq-geneseqp-embl/AA1986.DAT:*
| SIDSI/gcgdata/geneseq-geneseqp-embl/AA1989.DAT:*
| SIDSI/gcgdata/geneseq-geneseqp-embl/AA1989.DAT:*
| SIDSI/gcgdata/geneseq-geneseqp-embl/AA1989.DAT:*
| SIDSI/gcgdata/geneseq-geneseqp-embl/AA1991.DAT:*
| SIDSI/gcgdata/geneseq-geneseqp-embl/AA1991.DAT:*
| SIDSI/gcgdata/geneseq-geneseqp-embl/AA1991.DAT:*
| SIDSI/gcgdata/geneseq-geneseqp-embl/AA1991.DAT:*
| SIDSI/gcgdata/geneseq-geneseqp-embl/AA1992.DAT:*
| SIDSI/gcgdata/geneseq-geneseqp-embl/AA1992.DAT:*
| SIDSI/gcgdata/geneseq-geneseqp-embl/AA1999.DAT:*
| SIDSI/gcgdata/geneseq-geneseqp-embl/AA2001.DAT:*
                                                                                                                                                                                                                 273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Description
                                                                                                                                                                                                               1 MQLRTAFARRLEGKVALITG.....IDGGFSVCNSVIKVFQYPDS
                                                                                                                                                                                                                                                                                                                                           1107863
5.1.6
Compugen Ltd
                                                                                                                                                                                                                                                                                                                                         Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                         1107863 segs, 158726573 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SUMMARIES
                                                                                                          ٠.
GenCore version (c) 1993 - 2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                     100%
45 summaries
                                                                     protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAY54412
AAX54420
AAY54413
AAY54416
AAC21494
AAY54414
AAY54414
AAY54415
AAY54415
                                                                                                      October 23, 2003, 12:37:54
                                                                                                                                                                                                                                                                    Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                               Post-processing: Minimum Match 0% Maximum Match 100 Listing first 45
                                                                                                                                                                                                                                                                                                                                                                              seq length: 0
seq length: 200000000
                                                                                                                                                                        US-09-673-918A-2
1393
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 273
272
272
277
276
276
276
285
285
                Copyright
                                                                                                                                                                                                                                                   BLOSUM62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0.000.0
999.6
97.9
888.5
98.5
84.7
44.7
0.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 100.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1388
1364
1233
1233
1223
1175
658.5
                                                                                                                                                                              Title:
Perfect score:
                                                                                                                                                                                                                                                   Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 score
and is
                                                                   protein
                                                                                                                                                                                                                                                                                                                                                                              8
1
1
1
1
1
1
                                                                                                                                                                                                                 Sequence:
                                                                                                                                                                                                                                                                                                         Searched:
                                                                                                                                                                                                                                                                                                                                                                            Minimum I
Maximum I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Database
                                                                                                      Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                26459786
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Result
```

```
Arabidopsis thalia Arabidopsis thalia Herbicidally activ Arabidopsis thalia Listeria monocytog
            Arabidopsis thalia
Arabidopsis thalia
Arabidopsis thalia
Herbicidally activ
Maize Ts2 sequence
Herbicidally activ
                                                                                                              Arabidopsis thalia
Arabidopsis thalia
Herbicidally activ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     G. suboxydans DSM
Xylitol dehydrogen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Listeria monocytog
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Levodione reductas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Chlamydia pneumoni
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Secoisolariciresinol dehydrogenase; lignan biosynthetic pathway; lignan; matairesinol; health-protecting lignan; phytoestrogen; enterolactone; enterodiol; neutriceutical; dietary supplement; (-)-trachelogenin; antiviral; (-)-podophyllotoxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Secoisolariciresinol dehydrogenase protein clone DEHY133.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ALIGNMENTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Lewis NG;
                                                                                                                                                                                                                                                                                                                                                AAG09588
ABB92500
AAY77928
AAU36249
AAG25525
AAG25526
                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAG31553
AAG38248
ABB48207
AAY34891
                                              AAG31552
ABB92823
ABB92848
ABB92448
AAG24386
AAG21880
AAG51881
AAG51881
AAG51875
AAG51875
AAG5187795
AAG31795
AAG31795
AAG31795
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAB86337
AAY44578
ABBS0010
ABB92624
AAG18620
AAG18619
                                                                                                                                                                                                                                                                                               AAG51577
ABB92143
                                                                                                                                                                                                                                                                                                                                  AAG09589
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAB47459
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAY54412 standard; Protein; 273 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (UNIW ) UNIV WASHINGTON STATE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Costa MA, Davin LB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         99WO-US08975
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          98US-0082977
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      06-APR-2000 (first entry)
 Porsythia intermedia
 5055.5

505988.5

50597.5

50597.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

505988.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

505988.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

505988.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

505988.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

505988.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

505988.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

505988.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

505988.5

50598.5

50598.5

50598.5

50598.5

50598.5

50598.5

5059
```

us-09-673-918a-2.rag

04-NOV-1999

```
The present sequence represents a secoisolariciresinol dehydrogenase CC protein. The enzyme is involved in the lignan biosynthetic pathway. The enzyme is involved in the lignan biosynthetic pathway. The secoisolariciresinol dehydrogenase proteins have a molecular weight of 27-31 kba, an isolectric point of 5.9-6.85, and require cc weight of 27-31 kba, an isolectric point of 5.9-6.85, and require cc weight of 27-31 kba, an isolectric point of 5.9-6.85, and require cc will be a cofactor. The secoisolariciresinol dehydrogenase in plants or to alter lignan of secoisolariciresinol dehydrogenase in plants or to alter lignan biosynthesis. The enzyme is used for production of the pharmacologically cc active lignan, matairesinol. The secoisolariciresinol dehydrogenase cc alter the levels of health-protecting lignans, including phytosetrogens cross enterolactons and enterodiol, in plant species, including vegetables, grains and fruits and to food items incorporating material estimates and provide an abundant, natural supply of lignans useful for a variety of purposes, for example as neutriceuticals and dietary csupplements; to genetically alter living organisms to produce an abundant supply of optically pure lignans having desirable biological properties, and (-)-podophyllotoxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NSTYIHCDVINEDGVKNAVDNIVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSV 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GOFGIRVNCLSPFGLPTALGKKFSGIKNEBEFENVINFAGNLKGPKFNVEDVANAALYLA 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NSTYIHCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSV 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 MOLRTAFARRLEGKVALITGGASGIGETTAKLFSQHGAKVALADVQDELGHSVVEAIGTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1 MQLRTAFARRLEGKVALITGGASGIGETTAKCFSQHGAKVAIADVQDELGHSVVEAIGTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0; Gaps
New nucleic acid molecule encoding an enzyme involved in lignan biosynthetic pathway, useful for producing large amounts of lignans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Secoisolariciresinol dehydrogenase; lignan biosynthetic pathway; lignan, matairesinol; health-protecting lignan; phytoestrogen; enterolactone; enterodiol; neutriceutical; dietary supplement; (-) -trachelogenin; antiviral; (-) -podophyllotoxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              / Match 100.0%; Score 1393; DB 21; Length 273; Local Similarity 100.0%; Pred. No. 2.2e-130; les 273; Conservative 0; Mismatches 0; Indels 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Secoisolariciresinol dehydrogenase protein clone DEHY130.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              241 SDEAKYVSGHNLFIDGGFSVCNSVIKVFQYPDS 273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SDEAKYVSGHNLFIDGGFSVCNSVIKVFQYPDS 273
                                                            Claim 8; Page 46-47; 66pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAY54420 standard; Protein; 272 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Forsythia intermedia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            273 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           06-APR-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WO9955846-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         음 상
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
```

```
The present sequence represents a secoisolariciresinol dehydrogenase protein. The enzyme is involved in the lignan biosynthetic pathway.

The secoisolariciresinol dehydrogenase proteins have a molecular weight of 27-31 KDa, an isoelectric point of 5.9-6.85, and require weight of 27-31 KDa, an isoelectric point of 5.9-6.85, and require veight of 27-31 KDa, an isoelectric point of 5.9-6.85, and require weight of 27-31 KDa, an isoelectric point of 5.9-6.85, and require constant of 27-31 KDa, and isoelectric point of 5.9-6.85, and require constant of 27-31 KDa, and require constant of 28-31 KDA, and required constant of 28-31 KDA, and required constant of 28-31 KDA, and required constant of 28-31 KDA, and restant of 28-31 KDA, and an abundant, natural supply of 19-31 KDA, and dietary constant of 28-31 KDA, and an abundant, and an abundant, natural supply of 19-31 KDA, and dietary constant of 28-31 KDA, and an abundant, and an abundant, and an abundant supply of purposes, for example as neutriceuticals and dietary constant of 28-31 KDA, and an abundant supply of purposes, for example as neutriceuticals and dietary constant of 28-31 KDA, and an abundant supply of purposes, for example (-) tradendogenin which possesses antiviral constant of 28-31 KDA, and (-) tradendogenin which possesses antiviral constant constant of 28-31 KDA, and (-) tradendogenin which possesses antiviral constant constants.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STYIHCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVN 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            QPGIRVNCLSPEGLPTALGKKFSGIKNEEEFENVINFAGNLKGPKFNVEDVANAALYLAS 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             181 QFGIRVNCLSPFGLPTALGKKFSGIKNEEFFENVINFAGNLKGPKFNVEDVANAALYLAS 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STYIHCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVN 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      VTGVFLCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELG 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2 QLRTAFARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSN 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1 QLRTAFARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0; Gaps
                                                                                                                                                                                                                                                                                                           New nucleic acid molecule encoding an enzyme involved in lignan biosynthetic pathway, useful for producing large amounts of lignans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match 99.6%; Score 1388; DB 21; Length 272; Best Local Similarity 100.0%; Pred. No. 6.9e-130; Matches 272; Conservative 0; Mismatches 0; Indels 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DEAKYVSGHNLFIDGGFSVCNSVIKVFQYPDS 273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               241 DEAKYVSGHNLFIDGGFSVCNSVIKVFQYPDS 272
                                                                                                                                          (UNIW ) UNIV WASHINGTON STATE RES FOUND.
                                                                                                                                                                                       Lewis NG;
                                                                                                                                                                                                                                                                                                                                                                                   Example 2; Page 61-63; 66pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAY54413 standard; Protein; 277
                                                                                                                                                                                         Costa MA, Davin LB,
                                                                                           98US-0082977
                                                                                                                                                                                                                                      WPI; 2000-126356/11.
N-PSDB; AAZ45743.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 272 AA;
                                                                                              24-APR-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAY54413;
                                                                                                                                                                                         Xia Z,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 3
AAY5413
ID AAY5
XX
AC AAY5
XX
d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
```

ന

Page

```
186 QFGIRVNCLSPFGLPTALGKKFSGIKNEEEFENVINFAGNLKGPKFNVEDVANAALYLAS 245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                The present sequence represents a secoisolariciresinol dehydrogenase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              biosynthetic pathway, useful for producing large amounts of lignans
                                                                                                                                                                                                                                                                                                                                                                       Secoisolariciresinol dehydrogenase; lignan biosynthetic pathway; lignan; matairesinol; health-protecting lignan; phytoestrogen; enterolactone; enterodiol; neutriceutical; dietary supplement; (-)-trachelogenin; antiviral; (-)-podophyllotoxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  New nucleic acid molecule encoding an enzyme involved in lignan
                                                                                                                                                                                                                                                                                                                                  Secoisolariciresinol dehydrogenase protein clone SMDEHY631.
                                                                DEAKYVSGHNLFIDGGFSVCNSVIKVFQYPDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (UNIW ) UNIV WASHINGTON STATE RES FOUND.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Lewis NG;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Claim 8; Page 56-57; 66pp; English.
                                                                                                                                                                                                    Ą.
                                                                                                                                                                                                    AAY54416 standard; Protein; 276
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Costa MA, Davin LB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           99WO-US08975.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       98US-0082977.
                                                                                                                                                                                                                                                                                         06-APR-2000 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local Similarity
Matches 240; Conservat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Forsythia intermedia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WPI; 2000-126356/11.
N-PSDB; AAZ45734.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         276 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           23-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WO9955846-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    24-APR-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                04-NOV-1999.
                                             242
                                                                                                                                                                                                                                                AAY54416;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           xia Z,
                                                                                                                                                         RESULT 4
                                                                                                                                                                                AAY5441
                                                                                                                                                                                                    8
                                                                                    셤
                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  The present sequence represents a secoisolariciresinol dehydrogenase protein. The enzyme is involved in the lignan biosynthetic pathway. The secoisolariciresinol dehydrogenase proteins have a molecular weight of 27-31 kDa, an isoelectric point of 5.9-6.85, and require weight of 27-31 kDa, an isoelectric point of 5.9-6.85, and require nucleic acids are used for the recombinant expression of the enzymes. It is also used to obtain expression of the enzymes. It is also used to obtain expression of the pharmacologically secoisolariciresinol dehydrogenase in plants or to alter lignan biosynthesis. The enzyme is used for production of the pharmacologically active lignan, matairesinol. The secoisolariciresinol dehydrogenase proteins and nucleic acids can be utilized to: elevate or otherwise proteins and nucleic acids can be utilized to: elevate or otherwise alter the levels of health-protecting lignans, including phytoestrogens cuch as enterolactone and enterodiol, in plant species, including the enterolactone and enterodiol, in plant species, including derived from such genetically altered plants; genetically alter plant a variety of purposes, for example as neutricenticals and dietary supplements; to genetically alter living organisms to produce an abundant supply of optically pure lignans having desirable biological properties, for example (-) trandelogenin which possesses antiviral properties, and (-)-todophyllotoxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STYIHCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVN 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                STYIHCDVINEDGVKNAVDNIVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVFSVN 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VTGVFLCMKHAARVMIPARSGNIISTASLSSTWGGGSSHAYCGSKHAVLALTRNLAVELG 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       126 VIGVFLCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLGLTRNLAVELG 185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       6 QVLTAIARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSN 65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   QFGIRVNCLSPFGLPTALGKKFSGIKNEEFENVINFAGNLKGPKFNVEDVANALYLAS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2 QLRTAFARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              New nucleic acid molecule encoding an enzyme involved in lignan biosynthetic pathway, useful for producing large amounts of lignans
                                                                                      Secoisolariciresinol dehydrogenase; lignan biosynthetic pathway;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ö
                                                                                                         lignan, matairesinol, health-protecting lignan; phytoestrogen; enterolactone; enterodiol; neutriceutical; dietary supplement; (-)-trachelogenin; antiviral; (-)-podophyllotoxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 277;
                                         Secoisolariciresinol dehydrogenase protein clone SMDEHY321.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              97.9%; Score 1364; DB 21; 98.2%; Pred. No. 1.8e-127;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Pred. No. 1.86
1; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                       (UNIW ) UNIV WASHINGTON STATE RES FOUND.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Lewis NG;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Claim 8; Page 49-50; 66pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Costa MA, Davin LB,
                                                                                                                                                                                                                                                                                                                                                                             98US-0082977
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                98.28;
(first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     267; Conservative
                                                                                                                                                                                                Forsythia intermedia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2000-126356/11.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  277 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  N-PSDB; AAZ45731
                                                                                                                                                                                                                                           WO9955846-A1.
                                                                                                                                                                                                                                                                                                                                  23-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                             24-APR-1998;
                                                                                                                                                                                                                                                                                       04-NOV-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local &
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Xia Z,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
```

```
The secoisolariciteshing a secoisolariciteshing deplease protein. The enzyme is involved in the lignan biosynthetic pathway. The secoisolariciteshinol dehydrogenase proteins have a molecular weight of 27-31 kDa, an isoelectric point of 5.9-6.85, and require NAD or NADP as a coffactor. The secoisolariciteshinol dehydrogenase mucleic acids are used for the recombinant expression of the enzymes. It is also used to obtain expression or enhanced expression of the enzymes. It is also used to obtain expression or enhanced expression of the plarmacologically active lignan, mataireshinol. The secoisolariciteshinol dehydrogenase proteins and mucleic acids can be utilized to: elevate or otherwise proteins and mucleic acids can be utilized to: elevate or otherwise uch as enterolactone and enterodiol, in plant species, including phytocest uch as enterolactone and enterodiol, in plant species, including phytocest uch as enterolactone and enterodiol, in plant species, including carived from such genetically altered plants; genetically alter plant species to provide an abundant, natural supply of lignans useful for a variety of purposes, for example as neutriceuticals and dietary supplements; to genetically alter living organisms to produce an abundant supply of optically pure lignans having desirable biological properties, for example (-)-trachelogenin which possesses antiviral properties, and (-)-podophyllotoxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2 QLRTAFARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSN 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 276;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      18; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       88.5%; Score 1233; DB 21;
ilarity 88.2%; Pred. No. 2.1e-114;
Conservative 14; Mismatches 18;
```

임 ò g ò us-09-673-918a-2.rag

```
RESULT
                                                                                                                                                                                                                                                              Dp
                                                                                                               ò
                                                                                                                                                       g
                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                               δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          엄
                                                                                                                                                                                                                                                                                                                               The invention relates to a method for increasing the guaiacyl (G)-lignan content in seeds of a monocotyledon plant, comprising selecting at least formation, stably transforming a monocotyledon plant with cflignan (GG) constructs having a seed-specific transcriptional regulatory region operably linked to a nucleic acid sequence encoding the enzyme. The monocotyledonous plant (e.g. rice) with GG constructs resulting in increased expression of the genes encoded by GG constructs. The G-lignan enriched seed composition is useful as a food additive. This sequence represents the secoisolaricinesinol dehydrogenase protein relating to the invention.
                                                                                                                  STYIHCDVINEDGVKNAVDNIVSTYGKLDIMFNNAGISDPYKPRVIDNEKADFERVLSVN 124
                                                                                                                                                                                         VIGVFLCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALFRNLAVELG 181
                                                                                                                                                                                                                        OFGIRVNCLSPFGLPTALGKKFSGIKNEEFFENVINFAGNLKGPKFNVEDVANAALYLAS 241
                                                                                   STYIHCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVN 121
                              64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Guaiacyl (G)-lignan, monocotyledon plant, rice; food additive;
seed-specific transcriptional regulatory region; dehydrogenase; enzyme.
Increasing gualacyl-lignan content in monocotyledon plants, by transforming plant with chimeric gene construct having seed specific transcriptional transcriptional inked to gene encoding protein involved in G-lignan formation
                                                                                                                                                                                                                                                                                                                                                                                                                                        DEAQYVSGONLFIDGGFSVCNSAIKLFQYPDS 276
                                                                                                                                                                                                                                                                                                                                                                                                         DEAKYVSGHNLFIDGGFSVCNSVIKVFQYPDS 273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Secoisolariciresinol dehydrogenase protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (UNIW ) UNIV WASHINGTON STATE RES FOUND. (PHYT-) APPLIED PHYTOLOGICS INC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAO21494 standard, Protein, 276 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Claim 2; Fig 10; 136pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         07-SEP-2000; 2000US-230632P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        34-SEP-2001; 2001WO-US27500
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Davin LB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WPI; 2002-425767/45.
N-PSDB; AAL38432.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   276 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WO200220548-A1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Unidentified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         15-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      14-MAR-2002.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Lewis NG,
                                                                                                                                                                                                                                              125
                                                                                                                                                                                                                                                                                                   182
                                                                                                                                                                                                                                                                                                                                                    185
                                                                                                                                                                                                                                                                                                                                                                                                         242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AA021494;
                                                                                      62
                                                                                                                                        65
                                                                                                                                                                                             122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 5
AAO21494
AAO
                                                                                                                        9 9 9 9
                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                    ò
```

```
ö
                                                                                                                                                                                                                                                                                                                  65 STYIHCDVTNEDGVKNAVDNTVSTYGKLDIMFNNAGISDPYKPRVIDNEKADFERVLSVN 124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STYIHCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVN 121
                                                                                                                                                                                                                                                                                                                                                                                                       122 VTGVFLCMKHAARVMIPARSGNIISTASLSSTWGGGSSHAYCGSKHAVLALTRNLAVELG 181
                                                                                                                                           61
                                                                                                                                                                                                     64
                                                                                                                                                                                                                                                                                                                                                                                                                                                      182 QFGIRVNCLSPFGLPTALGKKFSGIKNEEEFENVINFAGNLKGPKFNVEDVANAALYLAS
                                                                                                                                           2 QLRTAFARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSN
                                                                                                                                                                                                     5 QLRTAFARRLEGKVALITGGASGVGEVTAKLFSQHGAKVAIADVQDELGHSVVEAIGLSN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           The present sequence represents a secoisolariciresinol dehydrogenase protein. The enzyme is involved in the lignan biosynthetic pathway. The secoisolariciresinol dehydrogenase proteins have a molecular weight of 27-31 kDa, an isoelectric point of 5.9-6.85, and require NAD or NADP as a cofactor. The secoisolariciresinol dehydrogenase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            New nucleic acid molecule encoding an enzyme involved in lignan biosynthetic pathway, useful for producing large amounts of lignans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Secoisolariciresinol dehydrogenase; lignan biosynthetic pathway; lignan, matairesinol; health-protecting lignan, phytoestrogen; enterolactone; enterodiol; neutriceutical; dietary supplement; (-)-trachelogenin; antiviral; (-)-podophyllotoxin.
                                                                         .;
0
   Length 276,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Secoisolariciresinol dehydrogenase protein clone SMDEHY431.
                                                                     Indels
Query Match

88.5%; Score 1233; DB 23;
Best Local Similarity 88.2%; Pred. No. 2.1e-114;
Matches 240; Conservative 14; Mismatches 18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DEAQYVSGQNLFIDGGFSVCNSAIKLFQYPDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DEAKYVSGHNLFIDGGFSVCNSVIKVFQYPDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (UNIW ) UNIV WASHINGTON STATE RES FOUND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /note= "encoded by GIN"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "encoded by GTN"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Lewis NG;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Location/Qualifiers
Misc-difference 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Claim 8; Page 51-52; 66pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAY54414 standard; Protein; 273 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Costa MA, Davin LB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               99WO-US08975
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             98US-0082977
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WPI; 2000-126356/11.
N-PSDB; AAZ45732.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Forsythia intermedia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Misc-difference 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WO9955846-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               23-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             24-APR-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    06-APR-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             04-NOV-1999
                                                                                                                                                                                                                                                                               62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Xia Z,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAV SAA AAV SA
```

```
tis also used to obtain expression or enhanced expression of
secolsolariciresinol dehydrogenase in plants or to alter lignan
bloosynthesis. The enzyme is used for production of the pharmacologically
active lignan, mataireshol. The secolsolaricireshol dehydrogenase
proteins and muclaic acids can be utilized to: elevate or otherwise
proteins and muclaic acids can be utilized to: elevate or otherwise
alter the levels of health-protecting lignans, including phytoestrogens
such as enterolactone and enterodiol, in plant species, including
vegetables, grains and fruits and to food items incorporating material
cerived from such genetically altered plants; genetically alter plant
species to provide an abundant, natural supply of lignans useful for
a variety of purposes, for example as neutriceuticals and dietary
complements; to genetically alter living organisms to produce an
abundant supply of optically pure lignans having desirable biological
properties, for example (-)-trachelogenin which possesses antiviral
                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NSTYIHCDVTNEDGVKNAVDNTVSTYGKLDIMFNNAGISDPYKPRVIDNEKADFERVLSX 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9
                                                                                                                                                                                                                                                                                                                                                                                                                               MQLRTAFARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MQLRTAIARRIEGKVALITGGASGVGEVTAKIFSQHGAKVAIADVQDELGHSVVEAIGPS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NSTYIHCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NVTGVFLCMKHAARVMI PARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GOFGIRVNCLSPFGLPTALGKKFSGIKNEEFFENVINFAGNLKGPKFNVEDVANAALYLA
nucleic acids are used for the recombinant expression of the enzymes
                                                                                                                                                                                                                                                                                                                                                                                            0; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Secoisolariciresinol dehydrogenase; lignan biosynthetic pathway;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               lignan; matairesinol; health-protecting lignan; phytoestrogen; enterolactone; enterodiol; neutriceutical; dietary supplement; (-)-trachelogenin; antiviral; (-)-podophyllotoxin.
                                                                                                                                                                                                                                                                                                                                                    87.8%; Score 1223; DB 21; Length 273;
86.8%; Pred. No. 2e-113;
.ive 15; Mismatches 21; Indels 0.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Secoisolariciresinol dehydrogenase protein clone SMDEHY511.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SDEAKYVSGHNLFIDGGFSVCNSVIKVFQYPDS 273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SDEAQYVSGQNLFIDGGFSVCNSAIKMFQYPDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (UNIW ) UNIV WASHINGTON STATE RES FOUND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Lewis NG;
                                                                                                                                                                                                                                                                              properties, and (-)-podophyllotoxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                    ..
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAY54415 standard; Protein; 277 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Costa MA, Davin LB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         99WO-US08975
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            98US-0082977
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (first entry)
                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local Similarity 86.8°
Matches 237; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Forsythia intermedia
                                                                                                                                                                                                                                                                                                                   273 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WO9955846-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       23-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            24-APR-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      06-APR-2000
                                                                                                                                                                                                                                                                                                                   Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Xia Z,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
```

```
SIXIHCDVTNEDDVKNAVDNTVSTYGKLDIMFNNAGIADPNKPRIVDNEKADFERVLSVN 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                The present sequence represents a secoisolariciresinol dehydrogenase protein. The enzyme is involved in the lignan biosynthetic pathway. The secoisolariciresinol dehydrogenase proteins have a molecular weight of 27-31 kDa, an isoelectric point of 5.9-6.85, and require NAD or NADP as a cofactor. The secoisolariciresinol dehydrogenase nucleic acids are used for the recombinant expression of the enzymes. It is also used to obtain expression or enhanced expression of secoisolariciresinol dehydrogenase in plants or to alter lignan biosynthesis. The enzyme is used for production of the pharmacologically active lignan, matairesinol. The secoisolariciresinol dehydrogenase proteins and nucleic acids can be utilized to: elevate or otherwise alter the levels of health-protecting lignans, including phytocestrogens such as enterolactone and enterodiol, in plant species, including material
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STYIHCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVN 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            122 VTGVFLCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELG 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         QFGIRVNCLSPFGLPTALGKKFSGIKNEEEFENVINFAGNLKGPKFNVEDVANAALYLAS 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 6 QVLTAITRRLEGKVALITGGASGIGEFTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSN
                                                                                                                                                                                                                                                                                                                                                                                                                         derived from such genetically altered plants; genetically alter plant species to provide an abundant, natural supply of lignans useful for a variety of purposes, for example as neutriceuticals and dietary supplements; to genetically alter living organisms to produce an abundant supply of optically pure lignans having desirable biological properties, for example (-)-trachelogenin which possesses antiviral properties, and (-)-podophyllotoxin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2 QLRTAFARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                      New nucleic acid molecule encoding an enzyme involved in lignan biosynthetic pathway, useful for producing large amounts of lignans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 277;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        84.4%; Score 1175; DB 21;
83.5%; Pred. No. 1.3e-108;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Herbicidally active polypeptide SEQ ID NO 540.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               20; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DEAKYVSGHNLFIDGGFSVCNSVIKVFQYPDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DEAKYVSGHNLFIDGGFSVYNSAIKMFQYPDT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Herbicidal; plant; agriculture; herbicide
                                                                                                                Claim 8; Page 54-55; 66pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ABB91329 standard; Protein; 285
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Arabidopsis thaliana.
WPI; 2000-126356/11.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Best Local Similarity
Matches 227; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    277 AA;
                  N-PSDB; AAZ45733
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WO200210210-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   31-MAY-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ABB91329;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ABB91329
  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
```

ø

```
5
                                                                                                                                                                                                                                                                                                                                                                                                             GIRVNCLSPFGLPTALGKKFSGIKNEBEFENVI----NFA---GNLKGPKFNVEDVANAA 236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           64 YIHCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVT 123
                                                                                                                                                                                                                                                                                                                                                                                                                                       GVFLCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQF 183
                                                                                                                                                                                        The invention relates to identifying target proteins (ARB90790-ABB94016) for herbicidally active compounds, comprising aligning and comparing nucleic acid or amino acid sequences from plant with nucleic acid or amino acid sequences from non-plant organisms using suitable search parameters, where plant sequences having an E-value greater by a factor of 3 than the B-value of most similar non-plant sequences are selected. The polypeptides or nucleic acids encoding them are useful for identifying modulators. The identified modulators are useful as herbicides.
                                                                                                                                                                                                                                                                                                                                                          8 ARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAI--GTSNST-- 63
                                                                                                                                                                                                                                                                                                                                                                     Protein identification; signal transduction pathway; metabolic pathway; hybridiation sasay; genetic mapping; gene expression control; promoter; termination sequence.
                                                                                                                      Identifying plant target proteins for herbicidally active compounds, comprising aligning and comparing nucleic acid or amino acid sequences from plant with nucleic acid or amino acid sequences.from non-plant organisms -
                                                                                                                                                                                                                                                                                                                Query Match

Query Match

Best Local Similarity 50.9%; Pred. No. 4.4e-57;

Matches 139; Conservative 43; Mismatches 78; Indels 13; Gaps
                                                                                                                                                                        Claim 5; SEQ ID NO 540; 261pp + Sequence Listing; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Arabidopsis thaliana protein fragment SEQ ID NO: 29625.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      237 LYLASDEAKYVSGHNLFIDGGFSVCNSVIKVFQ 269
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |:||||:::|:|| || |||||:
253 LFLASDDSRYISGDNLMIDGGFTCTNHSFKVFR 285
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAG25524 standard; Protein; 285 AA.
                                        28-AUG-2001; 2001WO-EP09892
                    28-AUG-2001; 2001WO-EP09892
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (first entry)
                                                                              Tietjen K, Weidler M;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Arabidopsis thaliana.
                                                                                                    WPI; 2002-269010/31.
                                                                                                                                                                                                                                                                                                285 AA;
                                                            (FARB ) BAYER AG.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EP1033405-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  17-OCT-2000
                                                                                                                                                                                                                                                                                                Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAG25524;
                                                                                                                                                                                                                                                                                                                                                                                                                                                          135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAG2552
 g
                                                                                                                                                                                                                                                                                                                                                                                                                 dd
                                                                                                                                                                                                                                                                                                                                                                                                                                                       QQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                    Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
```

```
R. 25. FEB-2000; 2000EP-0301439.

R. 25. FEB-2000; 2000EP-0301439.

R. 25. FRR.1999; 99US-01221825.

R. 25. FRR.1999; 99US-0122181.

R. 25. FRR.1999; 99US-012214.

R. 25. FRR.1999; 99US-012214.

R. 25. FRR.1999; 99US-012214.

R. 26. FRR.1999; 99US-012214.

R. 27. FRR.1999; 99US-013214.

R. 27. FRR.1999; 99US-013314.

R. 28. JUN-1999; 99US-013314.

R. 29. JUN-1999; 99US-
```

```
SQRLIGKVALITGGATGIGESIVRLFHKHGAKVCIVDLQDDLGGEVCKSLLRGESKETAF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            64 YIHCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GIRVNCLSPFGLPTALGKKFSGIKNEEEFENVI----NFA---GNLKGPKFNVEDVANAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8 ARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAI--GTSNST--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB 21; Length 285;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
47.0%; Score 654.5; DB 21; Length
Best Local Similarity 50.9%; Pred. No. 1.1e-56;
Matches 139; Conservative 42; Mismatches 79; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LYLASDEAKYVSGHNLFIDGGFSVCNSVIKVFQ 269
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ą
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ABB92624 standard; Protein; 303
                   9908 - 0155486
9908 - 0156458
9908 - 0156559
9908 - 015656
9908 - 0157753
9908 - 0157753
9908 - 0157753
9908 - 0159293
9908 - 0159293
9908 - 0159294
9908 - 0159294
9908 - 0159330
9908 - 0159330
9908 - 0159330
9908 - 0159330
9908 - 0159634
9908 - 0159634
9908 - 0160767
9908 - 0160767
9908 - 0160814
9908 - 0160814
9908 - 0160814
9908 - 0161406
9908 - 0161406
9908 - 0161406
9908 - 0161406
9908 - 0161406
9908 - 0161406
9908 - 0161359
9908 - 0161359
9908 - 0161359
     99US-0155139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (first entry)
                   23 - SEP - 1999

24 - SEP - 1999

29 - SEP - 1999

06 - OCT - 1999

06 - OCT - 1999

07 - OCT - 1999

13 - OCT - 1999

14 - OCT - 1999

14 - OCT - 1999

15 - OCT - 1999

16 - OCT - 1999

17 - OCT - 1999

18 - OCT - 1999

19 - OCT - 1999

19 - OCT - 1999

10 - OCT - 1999

11 - OCT - 1999

12 - OCT - 1999

13 - OCT - 1999

14 - OCT - 1999

15 - OCT - 1999

16 - OCT - 1999

17 - OCT - 1999

18 - OCT - 1999

19 - OCT - 1999

19 - OCT - 1999

10 - OCT - 1999

10 - OCT - 1999

11 - OCT - 1999

12 - OCT - 1999

13 - OCT - 1999

14 - OCT - 1999

15 - OCT - 1999

16 - OCT - 1999

17 - OCT - 1999

18 - OCT - 1999

18 - OCT - 1999

18 - OCT - 1999

19 - OCT - 1999

19 - OCT - 1999

10 - O
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               31-MAY-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ABB92624;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  75
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ABB92624
ID ABB9
XX
AC ABB9
XX
DT 31-N
     Dp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
990S-01420SS.
990S-0142830.
990S-0142830.
990S-0142830.
990S-0142830.
990S-0142842.
990S-0143242.
990S-0144332.
990S-0144333.
990S-0144333.
990S-0144333.
990S-0144333.
990S-0144638.
990S-0144638.
990S-0144638.
990S-0144638.
990S-0144638.
990S-014508.
990S-014508.
990S-014508.
990S-014508.
990S-014508.
990S-014538.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        99US-0151438.
99US-0151930.
99US-0152363.
99US-0153070.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             99US-0153758.
99US-0154018.
99US-0154039.
99US-0154779.
02-JUL-1999, 06-JUL-1999, 09-JUL-1999, 09-JUL-1999, 13-JUL-1999, 14-JUL-1999, 14-JUL-1999, 19-JUL-1999, 19-JUL-1999, 22-JUL-1999, 22-JU
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         05-AUG-1999;
05-AUG-1999;
06-AUG-1999;
06-AUG-1999;
09-AUG-1999;
10-AUG-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            11-AUG-1999
13-AUG-1999
13-AUG-1999
13-AUG-1999
17-AUG-1999
20-AUG-1999
20-AUG-1999
21-AUG-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       02-AUG-1999;
03-AUG-1999;
04-AUG-1999;
04-AUG-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       02-AUG-1999
02-AUG-1999
```

123

63 74

Gaps

13;

```
Arabidopsis thaliana
                                                                     EP1033405-A2
                                                                                                           25-FEB-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        04-JUN-1999;
07-JUN-1999;
08-JUN-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       18-JUN-1999;
18-JUN-1999;
18-JUN-1999;
18-JUN-1999;
                                                                                        06-SEP-2000
 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ---YIHCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGI--SDPNRPRIIDNEKADFERVL 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                146 RVNVRGVGLGMKHGARAMIKRGFKGCIISTASVAGVMGGMGPHAYTASKHAIVGLTKNAA 205
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      The invention relates to identifying target proteins (ABB90790-ABB94016) for herbicidally active compounds, comprising aligning and comparing nucleic acid or amino acid sequences from plant with nucleic acid or amino acid sequences from non-plant organisms using suitable search parameters, where plant sequences having an E-value greater by a factor of 3 than the E-value of most similar non-plant sequences are selected. The polypeptides or nucleic acids encoding them are useful for identifying modulators. The identified modulators are useful as herbicides.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SVNVTGVFLCMKHAARVMIP-ARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLA 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           178 VELGQFGIRVNCLSPFGLPTAL----GKKFSG--IKNE--EEFENVINFAGNLKGPKFNV 229
                                                                                                                                                                                                                                                                                                                                                                                                                                                        85
                                                                                                                                                                                                   Identifying plant target proteins for herbicidally active compounds, comprising aligning and comparing nucleic acid or amino acid sequences from plant with nucleic acid or amino acid sequences from non-plant organisms -
                                                                                                                                                                                                                                                                                                                                                                                                                                                 TAFARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNST-
                                                                                                                                                                                                                                                                                                                                                                                           / Match 44.9%; Score 625.5; DB 23; Length 303; Local Similarity 47.5%; Pred. No. 9.4e-54; Indels 15; Mismatches 78; Indels 15;
                                                                                                                                                                                                                                                    Claim 5; SEQ ID NO 1835; 261pp + Sequence Listing; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Arabidopsis thaliana protein fragment SEQ ID NO: 20101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EDVANAALYLASDEAKYVSGHNLFIDGGFSVCNSVI 265
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             266 NDIAEAALYLASDESKYVNGHNLVVDGGVTTARNCV 301
Herbicidally active polypeptide SEQ ID NO 1835.
                   Herbicidal; plant; agriculture; herbicide.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAG18620 standard; Protein; 300 AA
                                                                                                                       28-AUG-2001; 2001WO-EP09892.
                                                                                                   28-AUG-2001; 2001WO-EP09892
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (first entry)
                                                                                                                                                              Fietjen K, Weidler M;
                                      Arabidopsis thaliana
                                                                                                                                                                                WPI; 2002-269010/31.
                                                                                                                                                                                                                                                                                                                                                                           303 AA;
                                                                                                                                        (FARB ) BAYER AG.
                                                           WOZ00210210-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             17-OCT-2000
                                                                               07-FEB-2002.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAG18620;
                                                                                                                                                                                                                                                                                                                                                                                                                                    'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                        56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   119
                                                                                                                                                                                                                                                                                                                                                                             Sequence
                                                                                                                                                                                                                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                                                                                                                                                         Best Loca
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAG18620
ID AAG
XX
AC AAG
XX
DT 17-
XX
 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Dp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
```

```
::|||:||| :||||
DSKYVNGHNLVVDGGF----TTVKTLDFP 294
     99US-0151438
               01-SEP-1999
110-SEP-1999
110-SEP-1999
110-SEP-1999
110-SEP-1999
110-SEP-1999
120-SEP-1999
120-SEP-1999
121-SEP-1999
121-SE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   211
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              œ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     32
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    151
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Best Loca
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query
     음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8 · 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
           990S - 0140354

990S - 0140695

990S - 0140692

990S - 0141842

990S - 0141842

990S - 0142390

990S - 0142391

990S - 0144333

990S - 0144332

990S - 0144332

990S - 0144333

990S - 0144333

990S - 0144332

990S - 0144333

990S - 0145981

990S - 0144333

990S - 0144338

990S - 0144338

990S - 0144339

990S - 0144338

990S - 0144339

990S - 0144339

990S - 0144343

990S - 0149388

990S - 0149426

990S - 0149426

990S - 0149426

990S - 0149426

990S - 0149930

990S - 015066

990S - 015066
   99US-0140353
23 - JUN - 1999;
24 - JUN - 1999;
24 - JUN - 1999;
29 - JUN - 1999;
30 - JUL - 1999;
01 - JUL - 1999;
06 - JUL - 1999;
06 - JUL - 1999;
06 - JUL - 1999;
12 - JUL - 1999;
                                                                                                                                                                      14-JUL-1999;
15-JUL-1999;
16-JUL-1999;
16-JUL-1999;
19-JUL-1999;
                                                                                                                                                                                                                                 19-7UL-1999;
19-7UL-1999;
19-7UL-1999;
19-7UL-1999;
20-7UL-1999;
20-7UL-1999;
21-7UL-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  04-AUG-1999;
05-AUG-1999;
05-AUG-1999;
05-AUG-1999;
06-AUG-1999;
09-AUG-1999;
110-AUG-1999;
110-AUG-1999;
12-AUG-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     13-AUG-1999;
13-AUG-1999;
16-AUG-1999;
17-AUG-1999;
18-AUG-1999;
20-AUG-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 27-AUG-1999;
27-AUG-1999;
30-AUG-1999;
                                                                                                                                                                                                                                                                                                                                                                       2-JUL-1999;
                                                                                                                                                                                                                                                                                                                                                                                               -JUL-1999;
-JUL-1999;
                                                                                                                                                            13-JUL-1999
```

ARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTYIHC NCLSPFGLPTA----LGKKFSGIKNEEEFENVINFAGNLKGPKFNVEDVANAALYLASD Gaps 11; DB 21; Length 300; Indels / Match 43.0%; Score 598.5; DB 21; Local Similarity 46.8%; Pred. No. 4.6e-51; Les 126; Conservative 46; Mismatches 86; EAKYVSGHNLFIDGGFSVCNSVIKVFQYP 271 990S - 0151930 990S - 0151930 990S - 0153050 990S - 0153076 990S - 0153758 990S - 0154779 990S - 0155486 990S - 0155486 990S - 0155486 990S - 0155659 990S - 0155659 990S - 0155659 990S - 015929 990S - 0159638 990S - 0159638 990S - 0160740 990S - 0160740 990S - 0160980 990S - 0161405 990S - 0161405 990S - 0161405 990S - 0161405 990S - 0161360 990S - 0161360 99US-0161992. 99US-0161993. 99US-0162142.

187

67 90

```
99US - 013946 99US - 013946 99US - 013946 10 99US - 013946 12 99US - 013946 12 99US - 013946 12 99US - 013917 12 99US - 01408 12 99US - 01408 12 99US - 014408 12 99US - 014433 12 99US - 014513 12 99US - 014713 
   Protein identification; signal transduction pathway; metabolic pathway; hybridisation assay; genetic mapping; gene expression control; promoter; termination sequence.
                                                                                                                         Arabidopsis thaliana protein fragment SEQ ID NO: 20100.
                                 AAG18619 standard; Protein; 343 AA
                                                                                                                                                                                                                                                                                                                                     990S-0121825
990S-0123180
990S-0123180
990S-0125788
990S-0126264
990S-0126264
990S-0126767
990S-0130449
990S-0130449
990S-0130449
990S-0130449
990S-0131891
990S-0132467
990S-0132487
990S-0132487
990S-0132487
990S-0132487
990S-0132487
990S-0132487
990S-0132487
990S-0132487
990S-0132487
990S-0132863
990S-0132863
990S-0132863
990S-0134728
990S-0134728
990S-0136529
990S-0136529
990S-0136529
990S-0136629
990S-0136629
990S-0136629
990S-0136629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         99US-0139456.
99US-0139457.
99US-0139458.
                                                                                                                                                                                                                                                                                                          25-FEB-2000, 2000EP-0301439
                                                                                             (first entry)
                                                                                                                                                                                                                 Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                                     25-FEB-1999; 05-MAR-1999; 05-MAR-1999; 25-MAR-1999; 25-MAR-1999; 06-MAR-1999; 06-MA
                                                                                           17-OCT-2000
                                                                                                                                                                                                                                                EP1033405-A2
                                                                                                                                                                                                                                                                             06-SEP-2000
                                                           AAG18619;
```

```
NCLSPFGLPTA-----LGKKFSGIKNEEEFENVINFAGNLKGPKFNVEDVANAALYLASD 242
                                                                                                                                                                                                    Protein identification, signal transduction pathway, metabolic pathway, hybridisation assay, genetic mapping, gene expression control, promoter, termination sequence.
                                                                                                                                                                                  Arabidopsis thaliana protein fragment SEQ ID NO: 37910
                                                       ::||:|||:|||:||
DSKYVNGHNLVVDGGF----TTVKTLDFP 337
                                            EAKYVSGHNLFIDGGFSVCNSVIKVFQYP 271
                                                                                                                   AAG31552 standard; Protein; 283 AA
                                                                                                                                                                                                                                                                                                                                990S-0121825.
990S-0123180.
990S-012548.
990S-012624.
990S-012624.
990S-0126234.
990S-0128234.
990S-0130077.
990S-0130891.
990S-0130891.
990S-0131449.
990S-0132487.
990S-0132487.
990S-0132487.
990S-0132487.
990S-0132487.
990S-0132487.
990S-0134250.
990S-0134250.
990S-0134250.
990S-0134250.
990S-0134250.
990S-0134250.
990S-0134268.
990S-0134268.
                                                                                                                                                                                                                                                                                                             25-FEB-2000; 2000EP-0301439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              99US-0138540
99US-0138847
                                                                                                                                                              (first entry)
                                                                                                                                                                                                                                              Arabidopsis thaliana.
                                                                                                                                                                                                                                                                    EP1033405-A2
                                                                                                                                                                                                                                                                                                                                 25-FEB-1999;
05-MAR-1999;
09-MAR-1999;
23-MAR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                  21-APR-1999;
23-APR-1999;
23-APR-1999;
28-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           30-APR-1999;
30-APR-1999;
04-MAY-1999;
05-MAY-1999;
06-MAY-1999;
07-MAY-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             10-JUN-1999;
                                                                                                                                                             17-0CT-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   19-MAY-1999
20-MAY-1999
                                                                                                                                                                                                                                                                                         06-SEP-2000
    188
                                            243
                                                               313
                                                                                                                                         AAG31552;
                                                                                              RESULT 13
                                                                                                          AAG31552
                                                                                                                      g
                                                           셤
                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    4,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DVINEDGVKNAVDNIVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFL 127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ||| | : |||| || : |||||| || 134 DVTKESDIANAVDFAVSLHTKLDIMYNNAGIPCKTPPSIVDLDLNVFDKVINTNVRGVMA 193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRV 187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GIKHAARVMIPRNSGSIICAGSVTGMMGGLAQHTYSVSKSAVIGIVRSTASELCKHRIRV 253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8 ARRLEGKVALITGGASGIGETTAKLFSQHGAKVALADVQDELGHSVVEAIGTSNSTYIHC 67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             43.0%; Score 598.5; DB 21; Length 343; 46.8%; Pred. No. 5.6e-51; ive 46; Mismatches 86; Indels 11;
990S - 0149929
990S - 0149920
990S - 0149930
990S - 0150566
990S - 015066
990S - 015066
990S - 0151080
990S - 0151080
990S - 0151030
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Best Local Similarity 46.8
Matches 126, Conservative
                                                                                                                                                                                                                                                                07-07-1999
13-07-1999
13-07-1999
13-07-1999
13-07-1999
14-07-1999
14-07-1999
14-07-1999
14-07-1999
14-07-1999
18-07-1999
18-07-1999
18-07-1999
18-07-1999
18-07-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    25-OCT-1999;
25-OCT-1999;
26-OCT-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             28-OCT-1999;
                                                                                                                                                                                                                        29-SEP-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           75
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                89
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
```

6 6 6

g

```
RR 14.-UN-1999; 99US-0193119.

RR 16.-UNN-1999; 99US-01391345.

RR 18.-UNN-1999; 99US-013445.

RR 21.-UNN-1999; 99US-013446.

RR 21.-UNN-1999; 99US-013446.

RR 22.-UNN-1999; 99US-013446.

RR 22.-UNN-1999; 99US-013446.

RR 23.-UNN-1999; 99US-013446.

RR 23.-UNN-1999; 99US-013446.

RR 24.-UNN-1999; 99US-013446.

RR 24.-UNN-1999; 99US-013446.

RR 24.-UNN-1999; 99US-014082.

RR 24.-UNN-1999; 99US-014082.

RR 24.-UNN-1999; 99US-014082.

RR 24.-UNN-1999; 99US-0141842.

RR 24.-UNN-1999; 99US-0144334.

RR 24.-UNN-1999;
```

	Gaps
	283;
	Length Indels
	DB 21; :-51; 86;
	597.5; No. 5.3e
	Score 59 Pred. No 5; Misma
148319. 148319. 148319. 148318. 149318. 149426. 149426. 149426. 149426. 149426. 149426. 149426. 149426. 149426. 149426. 1550866. 1550866. 1550886.	42.9%; 47.0%; ive 4
0 - SIA66 0 - SI	arity
	sh Simil 26, C
111-Aug-19 112-Aug-19 113-Aug-19 113-Aug-19 114-Aug-19 115-Aug-19 116-Aug-19 117-Aug-19 118-Aug-19	Query Match Best Local S Matches 126
**************************************	Que Bes Mat

à a

134

```
VTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFLC 128
                                                          CLSPFGLPTA-----LGKKFSGIKNEEFFENVINFAGNLKGPKFNVEDVANAALYLASDE 243
            Tasselseed 2; Ts2; maize; H2 clone; rice; floral tissue; male; female;
bacterial hydroxysteroid dehydrogenase; sexual development; flower.
                                             MKHAARVMI PARSGNI I STASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRVN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Tasselseed 2 gene and promoter and expression systems for transforming plants - for controlling sexual development either predominantly male or female flowers, to simplify cross-breeding and production of hybrid seeds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  42.2%; Score 588.5; DB 1
42.2%; Pred. No. 5.4e-50;
live 50; Mismatches 88
                                                                                                                                                    AKYVSGHNLFIDGGFSVCNSVIKVFQYP 271
                                                                                                                                                                                                                       Ą
                                                                                                                                                                                                                       AAW06488 standard; Protein; 336
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Claim 2; Fig 6; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                        94WO-US09513.
                                                                                                                                                                                                                                                                     entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WPI; 1995-106591/14.
N-PSDB; AAT45060.
                                                                                                                                                                                                                                                                                          Maize Ts2 sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Best Local Similarity
Matches 122; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              336 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (UYYA ) UNIV YALE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      female flowers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Dellaporta SL;
                                                                                                                                                                                                                                                                                                                                                                                                                        23-AUG-1994;
                                                                                                                                                                                                                                                                                                                                                                          WO9505732-A1
                                                                                                                                                                                                                                                                                                                                                                                                 12-MAR-1995
69
                     75
                                             129
                                                                                        189
                                                                                                               195
                                                                                                                                       244
                                                                                                                                                             254
                                                                                                                                                                                                                                             AAW06488;
                                                                                                                                                                                                                                                                                                                                                      Zea mays.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
                                                                                                                                                                                                RESULT 15
                                                                                                                                                                                                            AAW06488
                                                                                                                                                                                                                       g
                                                           ద
                                                                                 ò
                                                                                                            g
                                                                                                                                       ઠે
                                          ò
                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
        VTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFLC 128
                    CLSPFGLPTA----LGKKFSGIKNEEFFENVINFAGNLKGPKFNVEDVANAALYLASDE 243
                                                                                                              The invention relates to identifying target proteins (ABB90790-ABB94016) for herbicidally active compounds, comprising aligning and comparing nucleic acid or amino acid sequences from plant with nucleic acid or amino acid sequences from non-plant organisms using suitable search parameters, where plant sequences having an E-value sequences by a factor of 3 than the E-value of most similar non-plant sequences are selected. The polypeptides or nucleic acids encoding them are useful for identifying modulators. The identified modulators are useful as herbicides.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTYIHCD 68
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MKHAARVMI PARSGNI I STASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRVN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Identifying plant target proteins for herbicidally active compounds, comprising aligning and comparing nucleic acid or amino acid sequenc from plant with nucleic acid or amino acid sequences from non-plant
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 23; Length 283;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                5; SEQ ID NO 2034; 261pp + Sequence Listing; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        86;
                                                                                                                                                                                                                                                                                                  Herbicidally active polypeptide SEQ ID NO 2034.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 42.9%; Score 597.5; DB 2
47.0%; Pred. No. 5.3e-51;
ive 45; Mismatches 86
                                                                                                                                                             AKYVSGHNLFIDGGFSVCNSVIKVFQYP 271
                                                                                                                                                                                                                                                                                                                           Herbicidal; plant; agriculture; herbicide
                                                                                                                                                                                                                              ABB92823 standard; Protein; 283 AA
                                                                                                                                                                                                                                                                                                                                                                                                                      28-AUG-2001; 2001WO-EP09892.
                                                                                                                                                                                                                                                                                                                                                                                                                                             2001WO-EP09892.
                                                                                                                                                                                                                                                                            (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Tietjen K, Weidler M;
                                                                                                                                                                                                                                                                                                                                                  Arabidopsis thaliana.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WPI; 2002-269010/31.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           283 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (FARB ) BAYER AG
                                                                                                                                                                                                                                                                                                                                                                         WO200210210-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                                             28-AUG-2001;
                                                                                                                                                                                                                                                                            31-MAY-2002
                                                                                                                                                                                                                                                                                                                                                                                               07-FEB-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       126;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         organisms
                             75
                                                    129
                                                                           135
                                                                                                                                               244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               σ
                                                                                                  189
                                                                                                                         195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Claim
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches
                           g
                                                    ò
                                                                     a
                                                                                                 ò
                                                                                                                      g
                                                                                                                                              ò
                                                                                                                                                                   g
                                                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
```

```
4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TPMPKRLDGKVAIVTGGARGIGEAIVRLFAKHGARVVIADIDDAAGEALASALGPQVS-F 105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      64
This sequence represents the tasselseed 2 (Ts2) protein derived from maize. This sequence is encoded by the H2 clone. The Ts2 protein in maize is very similar to Ts2 protein found in rice, and both these sequences show considerable homology to bacterial hydroxysteroid dehydrogenases. Ts2 has a mol. wt. of 35 kD and a predicted pl of 6.7. The Ts2 coding sequence and its promoter, may be used to control sexual development of floral tissue and to provide exclusively male
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  S TAFARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTY
                                                                                                                                                                                                                                                                                                                                                                                                                                          DB 16; Length 336;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          88;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Dp
```

produce

ដ

Search completed: October 23, 2003, 12:48:25 Job time : 87 secs

```
65 IHCDVTNEDGVKNAVDNTVSTY-GKLDIMFSNAGI---SDPNRPRIIDNEKADFERVLSV 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               5 TAFARRIEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LENGTH: 337 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Best Local Similarity 42.2%
Matches 122; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TELEX: 706141
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      amino acid
EDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           20037
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TOPOLOGY:
US-08-440-856A-3
                                                                                                                                                                                                                                                                                                      JS-08-440-856A-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 3, Appli
Sequence 4, Appli
Sequence 8, Appli
Sequence 24032, A
Sequence 5742, Ap
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          309, App
7731, Ap
6, Appli
1, Appli
29, Appl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              29, Appl
29, Appl
5042, Ap
20, Appl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       143, App
4431, Ap
4805, Ap
2, Appli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Appli
                                                                                        (without alignments)
412.531 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 1
Sequence 1
Sequence 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence
                                                                                                                           US-09-673-918A-2
1393
1 MQLRTAFARRLEGKVALITG......IDGGFSVCNSVIKVFQYPDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence
                                                                          October 23, 2003, 12:46:59 ; Search time 28 Seconds
                                                                                                                                                                                                                                                                                                                                                                                 /cgn2_6/ptodata/2/iaa/5A_COMB.pep:*
/cgn2_6/ptodata/2/iaa/5B_COMB.pep:*
/cgn2_6/ptodata/2/iaa/6A_COMB.pep:*
/cgn2_6/ptodata/2/iaa/6B_COMB.pep:*
/cgn2_6/ptodata/2/iaa/PCTUS_COMB.pep:*
/cgn2_6/ptodata/2/iaa/PCTUS_COMB.pep:*
GenCore version 5.1.6
(c) 1993 - 2003 Compugen Ltd
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-08-440-856A-3

US-08-440-856A-4

US-08-440-856A-8

US-09-252-991A-24032

US-09-328-328-5742

US-09-504-314-14

US-09-954-314-14

US-09-198-452A-309

US-09-198-452A-309

US-09-363-188B-6

US-09-363-188B-6

US-09-363-188B-6

US-09-468-738A-29

US-09-946-019-29

US-09-946-019-29

US-09-940-017A-29

US-09-940-017-29

US-09-134-001C-5642

US-09-134-001C-3562

US-09-134-001C-3562

US-09-134-001C-3562

US-09-134-001C-3562

US-09-134-011C-3562

US-09-134-011C-3562

US-09-134-011C-3562

US-09-134-011C-3562

US-09-134-011C-3562

US-09-134-011C-3562

US-09-134-011C-3562
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -09-134-001C-4431
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-08-375-962B-13
US-08-562-114B-13
US-08-729-594A-13
US-08-937-993-13
                                                                                                                                                                                                                                              Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                        328717 segs, 42310858 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SUMMARIES
                                                                                                                                                                                                                                                                                                              Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                 protein search, using sw model
                                                                                                                                                                                 BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                      Issued_Patents_AA:*
                                                                                                                                                                                                                                                                           seq length: 0
seq length: 200000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query
Match Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 349.5
341.5
341.5
341.5
341.5
331.5
324.5
323.331
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         320
318.5
317.5
317.5
317.5
312.5
312.5
312.5
                                                                                                                                            Perfect score:
                                                                                                                                                                                   Scoring table:
                                                                                                                                                                                                                                                                           Minimum DB
Maximum DB
                                                 OM protein
                                                                                                                                                       Sequence:
                                                                                                                                                                                                                        Searched:
                                                                                                                                                                                                                                                                                                                                                                       Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Run on
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Result
```

```
4825, Ap
30474, A
26759, A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      , Appl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 App]
                                                                                                                                                                                                                                                                                                                                                                                                  Sequence Seq
                                                                                                                                                                                           Sequence
Sequence
Sequence
Sequence
                                                    Sequence
Sequence
Sequence
     Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                42.2%; Score 588.5; DB 1; Length 337;
42.2%; Pred. No. 3.3e-55;
tive 50; Mismatches 88; Indels 29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Sequence 3, Application US/08440856A
| Patent No. 5750873
| GENERAL INFORMATION:
| JAPLICANT: DELLAPORTA, STEPHEN L.
| TITLE OF INVENTION: MATERIALS AND METHODS FOR PRODUCING
| TITLE OF INVENTION: PLANTS WITH SINGLE-SEX FLOWERS
| NUMBER OF SEQUENCES: 9
| CORRESPONDENCE ADDRESS:
| STREET: 2000 PENNSYLVANIA AVE. N.W.
| CITY: WASHINGTON
| STATE: D.C.
| CUMPRY: USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COMPUTER ERDABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: Eloppy disk
COMPUTER: Eloppy disk
COMPUTER: Eloppy disk
COMPUTER: COMPOSIBLE
COMPUTER: PatentIn Release #1.0, Version #1.25
SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/440,856A
FLING DATE: 1.5-MAY-1995
CLASSIFICATION: 800
ATTONREY/AGENT INFORMATION:
NAME: MILLMAN, ROBERT A.
REGISTRATION NUMBER: 36,217
REFRENCE/DOCKET NUMBER: 36,217
RETERRENCE/DOCKET NUMBER: 05463-20001.00
TELECOMMUNICATION INFORMATION:
TELEPERAKE (202) 887-0763
                                         US-09-134-001C-4825
US-09-252-991A-36474
US-09-252-991A-26759
US-09-238-481-2
US-09-328-35-5703
US-09-328-35-5703
US-09-328-32-8
US-09-466-109-8
US-08-594-8088-7
US-09-252-991A-28482
US-09-328-32-7773
US-09-328-32-7773
US-09-338-32-774
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-09-252-991A-28291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-09-634-955B-17
US-09-634-955B-20
US-09-328-352-5565
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ALIGNMENTS
305
304.5
304.5
304.5
301.5
301.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
204.5
20
```

```
Query Match
35.9%; Score 500; DB 1; Length 355
Best Local Similarity 38.8%; Pred. No. 1.3e-45;
Matches 112; Conservative 40; Mismatches 107; Indels
                                                                                                                                                                                                                                                                                                                                             COMPUTER READBLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION NUMBER: US/08/440,856A
FILING DATE: 15-MAY-1995
CLASSIFICATION: 800
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NAME: MILLMAN, ROBERT A.
REGISTRATION NUMBER. 36,217
REFERENCE/DOCKET NUMBER. 05463-20001.00
TELECOMMUNICATION INFORMATION:
TELEPHONE: (202) 887-1517
TELEPENX: (202) 887-0763
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          181 GQFGIRVNCLSPFGLPTA------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TELEFAX: (202) 887-0763
TELEX: 706141
INFORMATION FOR SEQ ID NO: 8:
SEQUENCE CHARACTERISTICS:
LENGTH: 359 amino acids
 182 OFGIRVNCLSPFGLPTAL-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         : 359 amino acids
amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MOLECULE TYPE: peptide
                                                                                                                                                                                                                                                                                                            AS.
D.C.
USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TYPE: amino
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-08-440-856A-8
                         g
                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                       à
                                                            104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 181
121 NVTGVFLCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVEL 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        5 TAFARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          65 IHCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGI----SDPNRPRIIDNEKADFERVLSVN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .22 VTGVFLCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELG
                                                                                                                                                            217 NFAGNLKGPKFNVEDVANAALYLASDEAKYVSGHNLFIDGGFSVCNSVI 265
                                                                                                                                                                             86 RGLATLKGPTLRPRDIAEAVLFLASDEARYISGHNLVVDGGVTTSRNLI 334
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ouery Match 41.8%; Score 582.5; DB 1; Length 333; Best Local Similarity 42.2%; Pred. No. 1.4e-54; Matches 121; Conservative 50; Mismatches 89; Indels 27;
                                                                                                                                                                                                                                                     Sequence 4, Application US/08440856A
| Sequence 4, Application US/08440856A
| Patent No. 5750873
| GENERAL INCOPAMATION:
| TITLE OF INVENTION: MATERIALS AND METHODS FOR PRODUCING TITLE OF INVENTION: PLANTS WITH SINGLE-SEX FLOWERS NUMBER OF SEQUENCES: 9
| CORRESPONDENCE ADDRESS:
| ADDRESSEE: MORELSON & FORESTER STREET: 2000 PENNSYLVANIA AVE. N.W.
| STATE: D.C.
| COUNTRY: USA
                                                                                                                                                                                                                                                                                                                                                                                                                                         TELERAX: (202) 887-0763
TELERAX: 706141
INPORMATION FOR SEQ ID NO: 4:
SEQUENCE CHARACTERISTICS:
LENGTH: 333 amino acids
STRANDEDNESS: single
TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-08-440-856A-4
                                                                                                                                                                                                                                  RESULT 2
US-08-440-856A-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   면 상 면
                                                                  g
                                                                                                                        q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                  à
                                                                                                                                                      ò
```

```
·5 TAFARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTY 64
-5 TAFARKLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTY 64
-50 TPMPKHLXGKVAIYIYGGASGIGEAIVRLFXKHGAXVVIAIIDDAAGEAIAXALGFY-VXF 108
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121 NVTGVFLCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVEL 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ---LGKKFSGIKNEEEFENVI 216
GIKNEEFFENVINF 218
                                 225 AHGIRVNCISPFGVATPMLINAWRQGHDASTADDADADIDLDIAVPSDQEVEKMEEVVRG 284
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    229 XH-GXRVNCXSPFGVATPMLINAWRQGHDXXTADXDXDXDXDLDXXVPSDQEVEKMEEVV 287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     65 IHCDVTNEDGVKNAVDNTVS-TYGKLDIMFSNAGI----SDPNRPRIIDNEKADFERVLSV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              30;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                217 NFAGNLKGPKFNVEDVANAALYLASDEAKYVSGHNLFIDGGFSVCNSVI 265
                                                                                                                                                                                                                                                                              US-08-440-856A-8
US-08-440-856A-8
US-08-440-856A-8
Sequence 8, Application US/08440856A
Fatent No. 5750873
GENERAL INFORMATION:
APPLICANTION: PLANTAN: STEPHEN L.
TITLE OF INVENTION: PLANTS WITH SINGLE-SEX FLOWERS
NUMBER OF SEQUENCES:
CORRESPONDENCE 9
CORRESPONDENCE ADDRESS:
STREET: 2000 PENNSTIVANIA AVE. N.W.
CITY: WASHINGTON
STATE: D.C.
STATE: D.C.
                                                                                                              219 AGNLKGPKFNVEDVANAALYLASDEAKYVSGHNLFIDGGFSVCNSVI 265
                                                                                                                                                  285 LATIKGATURPRDIAEAALFLASDDSRYISGHNLVVDGGVTTSRNLI 331
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 359;
```

m

셤

```
Sequence 14, Application US/09504358

Patent No. 6365376

GENERAL INFORMATION:
GENERAL INFORMATION:
FAPPLICANT: ROUVIERE, Pierre E.
APPLICANT: Brzostowicz, Patricia C.
TITLE OF INVENTION: GENES AND ENZYMES FOR THE PRODUCTION OF ADIPIC ACID INTERMEDIATES
FILE REFERENCE: BC1001 US NA
CURRENT APPLICATION NUMBER: US/09/504,358
CURRENT PILING DATE: 2000-02-15
EARLIER PILING DATE: 1999-February-19
NUMBER OF SEQ ID NOS: 49
SOFTWARE: Microsoft Office 97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             186 FGGDQIRVNSLTPGLIQTDI---TGGLMNDDRRHDIL--AGIPLGRLGKAQDVANAALFL 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFL 127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      63 DVSDESEVEIVVSDIAKRFGAINVLVNNAGVTGADKPTHEIDER-DLDLVLSVDVKGVFF 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       128 CMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRV 187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               188 NCLSPFGLPTALGKKFSGIKNEEFFENVINFAGNLKGPKFNV---EDVANAALYLASDEA 244
                                                                                               122 VTGVFLCMKHAARVMIPARSGNIISTASLSSTMGGG--SSHAYCGSKHAVLALTRNLAVE 179
                                                                                                                                                                                        180 LGOFGIRVNCLSPFGLPTALGKKFSGIKNEEFFENVINFAGNLKGPKFNVEDVANAALYL 239
                                                                   STYIHCDVINEDGVKNAVDNIVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVN 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 62
67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              3 RLGGKVAVITGGAAGMGRIQSELYASEGAQVAVVDVNEQEGRATADAIRASGGVANYWKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 10 RLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSN--STYIHC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 256;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        26.5%; Score 369; DB 4; Length 25
35.7%; Pred. No. 1.2e-31;
ive 55; Mismatches 101; Indels
                                                                                                                                                                                                                                                                                                                                                    240 ASDEAKYVSGHNLFIDGGFSV 260
                                                                                                                                                                                                                                                                                                                                                                            241 ASDLSAYLTGVTLDVNGGMLI 261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 14, Application US/09954314; Patent No. 6465224; GBNEAL INFORMATION: APPLICANT: ROUViere, Pierre E. APPLICANT: Brzostowicz, Patricia C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; TYPE: PRT
; ORGANISM: Brevibacterium sp HCU
US-09-504-358-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        :::| | :|||::
240 SFITGAVLPVDGGYT 254
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             245 KYVSGHNLFIDGGFS 259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local Similarity 35.7%,
Matches 91; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 7
US-09-954-314-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-09-504-358-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQ ID NO 14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              68
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         요
                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                             a
                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                ò
                                                                                                    g
                                                                                                                                               ò
                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 5742, Application US/09328352

Sequence 5742, Application US/09328352

Patent No. 6562958

GENERAL INFORMATION:
APPLICANT: Gary L. Breton et al.
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO ACINETOBACTER TITLE OF INVENTION: BADMANNII FOR DIAGNOSTICS AND THERAPEUTICS
FILE REFERENCE: GTC99-03PA
CURRENT APPLICATION NUMBER: US/09/328,352
CURRENT PILING DATE: 1999-06-04
NUMBER OF SEQ ID NOS: 8252
SEQ ID NOS: 8252
                                                                                                                                                                            APPLICANT: Marc J. Rubenfield et al.

TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS
TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
CURRENT APPLICATION NUMBER: US/09/252,991A
CURRENT APPLICATION NUMBER: US 60/074,788
PRIOR APPLICATION NUMBER: US 60/074,788
PRIOR FILING DATE: 1998-02-18
PRIOR FILING DATE: 1998-02-18
PRIOR FILING DATE: 1998-07-27
NUMBER OF SEQ ID NOS: 33142

SEQ ID NO 24032
LENGTH: 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ;
9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SO SKLLSGQVALVTGGAAGIGRATALAFAAAGVKVVVADLDSAGGEGTVEAIRQAGGEALFI 109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       66 HCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGV 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FLCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGI 185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          4 RTAFARRLEGKVALITGGAS--GIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSN 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8 ARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAI--GTSNSTYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RVNCL.SPFGLPTALGKK-FSGIKNEEEFENVINFAGNLKGPKFNVEDVANAALYLASDEA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ..
8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         12;
  288 RGLATLKGXTLRPRDIAEAXLFLASDXXRYISGHNLVVDGGVTTSRNLI 336
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 301;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       27.0%; Score 376; DB 4; Length 262; 36.0%; Pred. No. 2.1e-32; ive 54; Mismatches 101; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ch 31.4%; Score 437; DB 4; Length 30
I Similarity 37.9%; Pred. No. 6.6e-39;
96; Conservative 52; Mismatches 97; Indels
                                                                                 9-09-252-991A-24032
Sequence 24032, Application US/09252991A
Patent No. 6551795
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ; TYPE: PRT
; ORGANISM: Acinetobacter baumannii
US-09-328-352-5742
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORGANISM: Pseudomonas aeruginosa
US-09-252-991A-24032
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  : :| | :||
285 GFTTGIALPVDGG 297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   245 KYVSGHNLFIDGG 257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local Similarity 36.04
Matches 94; Conservative
                                                                                                                                                           GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 5
US-09-328-352-5742
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LENGIH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
```

g

ò

음 ઠે g ò g ò

ò

```
APPLICANT: SUGIYAMA, MASAKAZU
APPLICANT: TONOUCHI, NAOTO
APPLICANT: TONOUCHI, NAOTO
APPLICANT: TONOUCHI, NAOTO
APPLICANT: SUZUKI, SHUMICHI
APPLICANT: YOKOZEKI, KENZO
TITLE OF INVENTION: XYLITOL DEHYDROGENASE OF ACETIC ACID BACTERIA AND GENE THEREOF
FILE REFERENCE: 0010-1024-0
CURRENT APPLICATION NUMBER: US/09/363,189B
CURRENT FILING DATE: 1999-07-26
PRIOR APPLICATION NUMBER: JP10-216047
PRIOR FILING DATE: 1999-07-30
                                                                                                                                                                                                                                                                                                                              Sequence 773.1 pplication US/09328352
| Sequence 773.1 pplication US/09328352
| Patent No. 656298
| GENERAL INFORMATION:
| APPLICANT GATY L. Breton et al. | APPLICANT GATY L. Breton et al. | APPLICANT GATY L. Breton et al. | APPLICANT GATY L. BAUMANNII FOR DIAGNOSTICS AND THERAPEUTICS | TITLE OF INVENTION: BAUMANNII FOR DIAGNOSTICS AND THERAPEUTICS | CURRENT APPLICATION NUMBER: US/09/328,352 | CURRENT FILING DATE: 1999-06-04 | NUMBER OF SEQ ID NOS: 8252 | SED ID NO
                                      ---GPKFNVEDVANAALYL 239
                                                                               65 VYDEDAYKQAIELTQKTFGTVDILINNAGFQ--HVAPIEEFPIAVFQKLVQVMLTGAFIG 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 69 VINEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFLC 128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       129 MKHAARVMIPARSGNIISTASLSSTWGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRVN 188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         189 CLSPFGLPTALGK-----KFSGIKNEEEFENVINFAGNLKGPKFNVEDVANAALYLAS 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            11 LEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTS--NSTYIHCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match 25.3%; Score 352; DB 4; Length 261; Best Local Similarity 34.5%; Pred. No. 8.2e-30; Matches 89; Conservative 53; Mismatches 104; Indels 1
                                      189 CLSPFGLPTALGKKFSGIKNEEEFENVINFAGNLK-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 6, Application US/09363189B
Patent No. 624228
GENERAL INFORMATION:
                                                                                                                                                                                                                   231 ASQLSSYMTAQTLVVDGGLT 250
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ; ORGANISM: Acinetobacter baumannii
US-09-328-352-7731
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  242 DEAKYVSGHNLFIDGGFS 259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         :| |:| : :|||::
242 SKAGGVTGQAVVMDGGYT 259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NUMBER OF SEQ ID NOS: 16
SOFWARE: Patentin version 3.0
SEQ ID NO 6
LENGTH: 262
                                                                                                                                                           240 ASDEAKYVSGHNLFIDGGFS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 10
US-09-363-189B-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                         ò
                                                                                      g
                                                                                                                                              ò
                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CC
TITLE OF INVENTION: GENES AND ENZYMES FOR THE PRODUCTION OF ADIPIC ACID INTERMEDIATES FILE REFERENCE: BC1001 US NA CURRENT APPLICATION NUMBER: US/09/954,314
CURRENT FILING DATE: 2001-09-17
PRIOR APPLICATION NUMBER: 60/120,702
PRIOR FILING DATE: 1999-February-19
NUMBER OF SEQ ID NOS: 49
SOFTWARE: MCCROSOFT Office 97
SEQ ID NO 14
LENGTH: 256
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 309, Application US/09198452A

Patent No. 6559294

GENERAL INFORMATION:
GENERAL INFORMATION:
TITLE OF INVENTION: Chlamydia pneumoniae genomic sequence and polypeptides, fragments
TITLE OF INVENTION: thereof and uses thereof, in particular for the diagnosis, preve
TITLE OF INVENTION: and treatment of infection
FILE REFERENCE: 9710-003-999

CURRENT APPLICATION NUMBER: US/09/198,452A

CURRENT FILING DATE: 1998-11-24

NUMBER OF SEQ ID NOS: 6849

LENGTH: 251
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ŝ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ġ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DVINEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFL 127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRV 187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   188 NCLSPFGLPTALGKKFSGIKNEEEFENVINFAGNLKGPKFNV---EDVANAALYLASDEA 244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          69 VTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFLC 128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .29 MKHAARVMIPARSGNIISTASLSSTWGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRVN 188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        3 RIGGKVAVITGGAAGMGRIQSELYASEGAQVAVVDVNEQEGRATADAIRASGGVANYWKL 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       10 RLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSN--STYIHC 67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        11 LEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAI-GTSNS-TYIHCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
25.6%; Score 357; DB 4; Length 251;
Best Local Similarity 33.5%; Pred. No. 2.28-30;
Matches 97; Conservative 53; Mismatches 92: Indels 28; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8;
                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 256;
                                                                                                                                                                                                                                                                                                                                                                                                                               h
I Similarity 35.7%; Pred. No. 1.2e-31.
91; Conservative 55; Mismatches 101; Indels
91; Conservative 55; Mismatches 101; Indels
                                                                                                                                                                                                                                                                                                             TYPE: PRT
ORGANISM: Brevibacterium sp HCU
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ; ORGANISM: Chlamydia pneumoniae
US-09-198-452A-309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      245 KYVSGHNLFIDGGFS 259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   240 SFITGAVLPVDGGYT 254
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 8
US-09-198-452A-309
                                                                                                                                                                                                                                                                                                                                                   ; OKGANISH: US-09-954-314-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           68
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 128
                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local &
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
```

us-09-673-918a-2.rai

S

```
242 DEAKYVSGHNLFIDGGFSVCNSVIKVFQYP 271
                                                                      Sequence 29, Application US/09468738A Patent No. 6312933
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 29, Application US/09940019; Patent No. 6416986; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ORGANISM: Bacillus subtilis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-09-468-738A-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               à
                                                                                                                                                                             9
                                                                                                                                                                                                                                                                                                                                                                                                                       120 AFHVLKAVSRQMITQNYGRIVNTASMAGVKGPPNMAAYGASKGAIIALTETAALDLAPYN 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       IRVNCLSP-------FGLPTALGKKFSGIKNEEEFENVINFAGNLKGPKF-NVED 231
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     180 IRVNAISPGYMGPGFMWBRQVELQAKVGSQYFSTDPKVVAQQMI---GSVPMRRYGDINE 236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         66 HCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEK---ADFERVLSVNV 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    65 IHCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTG 124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    125 VFLCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFG 184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            123 TGVFLCMKHAARVMIPARSGNIISTASLSSTWGGGSSHAYCGSKHAVLALTRNLAVELGQ 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FGIRVNCLSPFGLPTALGKKF-----SGIKNEEEFENVINFAGNLKGPKFNVEDVANA 235
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      10 RLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDE----LGHSVVEAIGTSNSTYI 65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ::: | | | | | | | | | | | | :: | :- | | :- | :- | | :- | | :- | | :- | | :- | | :- | | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- | :- |
                                                                                                                                                                                                                                          8 ARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDEL---GHSVVEAIGTSNSTY
                                                                                                                                                                             Gaps
                                                                                                                                                                          21;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 4; Length 267;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GENERAL INFORMATION:
APPLICANT: Wada, Masaru
APPLICANT: Wada, Masaru
TITLE OF INVENTION: Levodione reductase gene and use thereof
FILE REPERSING: Levodione reductase
CURRENT APPLICATION NUMBER: US/09/773,748
CURRENT FILING DATE: 2001-01-31
PRIOR FILING DATE: 2000-02-01
NUMBER OF SEQ ID NOS: 2
SOFTWARE: Patentin Ver: 2.1
SEQ ID NO 1
LENGTH: 267
                                                                                                      25.1%; Score 349.5; DB 3; Length 3
31.2%; Pred. No. 1.5e-29;
ive 55; Mismatches 107; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ch 24.7%; Score 343.5; DB 4;
1 Similarity 33.3%; Pred. No. 7.1e-29;
88; Conservative 48; Mismatches 105;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        232 VANAALYLASDEAKYVSGHNLFIDGG 257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    236 ALYLASDEAKYVSGHNLFIDGGFS 259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TYPE: PRT
ORGANISM: Corynebacterium aquaticum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ; Sequence 1, Application US/09773748
; Patent No. 6534297
ORGANISM: Gluconobacter oxydans
                                                                                                                                                                          83; Conservative
                                                                                                                                          Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local Similarity
Matches 88; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ठे
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
```

```
GENERAL INFUGANTICAL

APPLICANT: Kimoto, No. 6312933ihiro

APPLICANT: Kimoto, No. 6312933ihiro

APPLICANT: Kimoto, Hiroaki

APPLICANT: Kimoto, Hiroaki

APPLICANT: Wamamoto, Hiroaki

APPLICANT: Mitsuhashi, Kazuya

TITLE OF INVENTION: BNCODING SAID ENZYME, AND METHOD FOR PRODUCING ALCOHOL USING SAI

TITLE OF INVENTION: ENCODING SAID ENZYME, AND METHOD FOR PRODUCING ALCOHOL USING SAI

TITLE OF INVENTION: ENCODING SAID ENZYME, AND METHOD FOR PRODUCING ALCOHOL USING SAI

TITLE OF INVENTION: ENCOMES.

CURRENT APPLICATION NUMBER: US/09/468,738A

CURRENT FILING DATE: 1999-12-21

FRIOR FILING DATE: 1999-06-171160

FRIOR FILING DATE: 1999-06-17

FRIOR FILING DATE: 1999-12-21

NUMBER: OF SEQ ID NOS: 29

SOFTWARE: PATENTIN VET: 2.0, reformatted using WordPerfect 5.1

LENGTH: 261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GENERAL INFORMATION.

JAPPLICANT: Kimoto, No. 6416986ihiro
APPLICANT: Kimoto, No. 6416986ihiro
APPLICANT: Kimoto, Hiroaki
APPLICANT: Yamamoto, Hiroaki
APPLICANT: Witshiashi, Kazuya
TITLE OF INVENTION: BNCODING SAID ENZYME, AND METHOD FOR PRODUCING ALCOHOL USING SAID
TITLE OF INVENTION: ENCODING SAID ENZYME, AND METHOD FOR PRODUCING ALCOHOL USING SAID
TITLE OF INVENTION: ENZYME
FILE REFERENCE: 06501-05001
CURRENT APPLICATION NUMBER: US/09/940,019
CURRENT FILING DATE: 1999-06-17
PRIOR APPLICATION NUMBER: US/468,738
PRIOR FILING DATE: 1999-06-17
PRIOR APPLICATION NUMBER: US/98-363130
PRIOR FILING DATE: 1999-06-17
NUMBER OF SEQ ID NOS: 29
SOUTWARE: Patentin Ver: 2.0, reformatted using WordPerfect 5.1
LENGTH: 261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             63 QGDVTKEEDVKNIVQTAIKEFGTLDIMINNAGLENP----VPSHEMPLKDWDKVIGTNLT 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GVFLCMKHAARVMIPAR-SGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQ 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       119 GAFLGSREAIKYFVENDIKGNVINMSSVHEVIPWPLFVHYAASKGGIKLMTETLALEYAP 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              66 HCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEK--ADFERVLSVNVT 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            183 FGIRVNCLSPFGLPTAL-GKKFSGIKNEEEFENVINFAGNLKGPKFNVEDVANAALYLAS 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     11 LEGKVALITGGASGIGETTAKLFSQHGAKVAI---ADVQD--ELGHSVVEAIGTSNSTYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match 24.5%; Score 341.5; DB 4; Length 261; Best Local Similarity 34.4%; Pred. No. 1.1e-28; Matches 93; Conservative 50; Mismatches 98; Indels 29
```

us-09-673-918a-2.rai

```
Sequence 5042.

Requence 5043.

Requence 5043.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      68 VQGDVSIEEDIKRMIETTINHFGTLDIIINNAGFENSIPTHEMSID----DWQKVIDINL 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                179 KGIRVNNIGPGAINTPINAEKFADPKQKADVESMIPM-GYIGEP----EEIAAVAAWLAS 233
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          65 IHCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGI --SDPNRPRIIDNEKADFERVLSVNV 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            123 TGVFLCMKHAARVMIPA-RSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELG 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 11 LEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTY----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   35;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DB 4; Length 267;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match 23.8%; Score 331.5; DB 4; Best Local Similarity 32.1%; Pred. No. 1.4e-27; Matches 88; Conservative 55; Mismatches 96;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             238 YLASDEAKYVSGHNLFIDGGFSVCNSVIKVFQYP 271
                                                            242 DEAKYVSGHNLFIDGGFSVCNSVIKVFQYP 271
                                                                                                       234 KEASYVIGITLFADGGMT-----QYP 254
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Search completed: October 23, 2003, 12:52:01 Job time : 30 secs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; ORGANISM: Staphylococcus epidermidis
US-09-134-001C-5042
                                                                                                                                                                                                        RESULT 15
US-09-134-001C-5042
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                        ð
                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GENERAL INFORMATION:
APPLICANT: KIMOLO, NO. 6485948ihiro
APPLICANT: KIMOLO, NO. 6485948ihiro
APPLICANT: KIMOLO, NO. 6485948ihiro
APPLICANT: KIMOLO, NO. 6485948ihiro
APPLICANT: KIMOLO, HILORKI
APPLICANT: MISHABARI, KAZAUMA
TITLE OF INVENTION: NOVEL CARBONYL REDUCTASE, METHOD FOR PRODUCING SAID ENZYME, DNA
TITLE OF INVENTION: ENZYME
FILE REPERENCE: 0650.01
CURRENT APPLICATION NUMBER: 05/99/40,037A
CURRENT FILING DATE: 2006-08-27
PRIOR APPLICATION NUMBER: 05/468,738
PRIOR APPLICATION NUMBER: 05/468,738
PRIOR PELING DATE: 1999-12-21
PRIOR APPLICATION NUMBER: 07/468,738
PRIOR FILING DATE: 1999-12-21
PRIOR APPLICATION NUMBER: 07/468,738
PRIOR PELING DATE: 099-12-21
SEGO ID NOS: 29
LENGTH: 261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  10;
                                                                                                                                                                             10,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                66 HCDVINEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEK--ADFERVLSVNVT 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          63 QGDVTKEEDVKNIVQTAIKEFGTLDIMINNAGLENP----VPSHEMPLKDWDKVIGTNLT 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        183 FGIRVNCLSPFGLPTAL-GKKFSGIKONEEFENVINFAGNLKGPKFNVEDVANAALYLAS 241
                                                                                                                                                                                                                                                                                                                                                                                            63 QGDVTKEEDVKNIVQTAIKEFGTLDIMINNAGLENP----VPSHEMPLKDWDKVIGTNLT 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GVFLCMKHAARVMIPAR-SGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQ 182
                                                                                                                                                                                                                                                                                                                                                    66 HCDVINEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEK--ADFERVLSVNVT 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     124 GVFLCMKHAARVMIPAR-SGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQ 182
                                                                                                                                                                                                                                                                           11 LEGKVALITGGASGIGETTAKLFSQHGAKVAI---ADVQD--ELGHSVVEAIGTSNSTYI 65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       11 LEGKVALITGGASGIGETTAKLFSQHGAKVAI---ADVQD--ELGHSVVEAIGTSNSTYI
                                                                                                                                                                             29; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match 24.5%; Score 341.5; DB 4; Length 261;
Best Local Similarity 34.4%; Pred. No. 1.1e-28;
Matches 93; Conservative 50; Mismatches 98; Indels 29; Gaps
                                                                                                                 ch 24.5%; Score 341.5; DB 4; Length 261; l Similarity 34.4%; Pred. No. 1.1e-28; 93; Conservative 50; Mismatches 98; Indels 29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        242 DEAKYVSGHNLFIDGGFSVCNSVIKVFQYP 271
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 29, Application US/09940037A; Patent No. 6485948; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               , ORGANISM: Bacillus subtilis
US-09-940-037A-29
      ; TYPE: PRT
; ORGANISM: Bacillus subtilis
US-09-940-019-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 14
US-09-940-037A-29
                                                                                                                        Query Match
Best Local S
Matches 93
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Db
                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                     상
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8 8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ob
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        · 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
```

ω ..

AADDI AADDI

Sequence Sequence Sequence Sequence

Sequence Sequence Sequence Sequence

Sequence Sequence Sequence Sequence

Minimum DB Maximum DB

Database

Sequence Sequence Sequence

Sequence Sequence S

Sequence Sequence Sequence Sequence

Sequence Sequence S

protein

on:

Run Š

Sequence:

```
STYIHCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVN 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            STYIHCDVINEDGVKNAVDNIVSTYGKLDIMFNNAGISDPYKPRVIDNEKADFERVLSVN 124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QLRTAFARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               QLRTAFARRLEGKVALITGGASGVGEVTAKLFSQHGAKVAIADVQDELGHSVVEAIGLSN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     OTHER INFORMATION: secoisolariciresinol dehydrogenase amino acid
OTHER INFORMATION: sequence from plasmid pAP1249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 276;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 24, Application US/09944160
| Patent No. US20020174452A1
| GENERAL INFORMATION:
| APPLICANT: Lewis, No. US20020174452Alman
| APPLICANT: Huang, Ning
| TITLE OF INVENTION: Content
| FILE REFERENCE: WENLITON: Content
| FILE REFERENCE: WENLITON: ONDER: US/09/944,160
| CURRENT APPLICATION NUMBER: US/09/944,160
| PRIOR APPLICATION NUMBER: US/01-08-30
| PRIOR APPLICATION NUMBER: US/01-08-30
| NUMBER OF SEQ ID NOS: 49
| SOFTWARE: FASESEQ FOR WINDOWS VERSION 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match 88.5%; Score 1233; DB 10;
Best Local Similarity 88.2%; Pred. No. 3.7e-115;
Matches 240; Conservative 14; Mismatches 18;
US-10-242-574-82
US-10-243-421-82
US-10-243-401-82
US-10-243-402-82
US-10-243-402-82
US-10-245-164-82
US-10-245-164-82
US-10-245-164-82
US-10-245-163-82
US-10-245-103-82
US-10-245-103-82
US-10-245-103-82
US-10-245-103-82
US-10-245-147-82
US-10-245-831-82
US-10-245-831-82
US-10-245-831-82
US-10-245-147-82
                                                                                                                                                                                                                                                                                                                                                                                                                                   US-10-245-621-82
US-10-245-880-82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ALIGNMENTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ORGANISM: Artificial Sequence
   US-09-944-160-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-09-944-160-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQ ID NO 24
LENGTH: 276
   N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FEATURE:
    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 24, Appli
Sequence 11842, A
Sequence 11842, A
Sequence 14255, A
Sequence 14, Appl
Sequence 6, Appli
Sequence 6, Appli
Sequence 1, Appli
                                                                                                       October 23, 2003, 12:50:44; Search time 68 Seconds (without alignments) 672.305 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Pred. No. is the number of results predicted by chance to have a
score greater than or equal to the score of the result being printed,
and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 82,
Sequence 82,
Sequence 82,
                                                                                                                                                                                                    273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Description
                                                                                                                                                                                                  1 MQLRTAFARRLEGKVALITG.....IDGGFSVCNSVIKVFQYPDS
                                                                                                                                                                                                                                                                                                                                                                                                                                           Published Applications AA:*

1: /cgn2_6/ptodata/1/pubpaa/USO7_PUBCCMB.pep:*
2: /cgn2_6/ptodata/1/pubpaa/PCT_MBW_PUB.pep:*
3: /cgn2_6/ptodata/1/pubpaa/USO6_NBW_PUB.pep:*
4: /cgn2_6/ptodata/1/pubpaa/USO6_PUBCOMB.pep:*
5: /cgn2_6/ptodata/1/pubpaa/USO7_NBW_PUB.pep:*
6: /cgn2_6/ptodata/1/pubpaa/USO7_NBW_PUB.pep:*
7: /cgn2_6/ptodata/1/pubpaa/USO8_NBW_PUB.pep:*
8: /cgn2_6/ptodata/1/pubpaa/USO8_PUBCCMB.pep:*
9: /cgn2_6/ptodata/1/pubpaa/USO8_PUBCCMB.pep:*
11: /cgn2_6/ptodata/1/pubpaa/USO9_PUBCCMB.pep:*
12: /cgn2_6/ptodata/1/pubpaa/USO9_PUBCCMB.pep:*
13: /cgn2_6/ptodata/1/pubpaa/USO6_PUBCCMB.pep:*
               GenCore version 5.1.6
(c) 1993 - 2003 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-09-944-160-24

US-09-944-160-24

US-10-342-224-8

US-10-1156-761-1135

US-10-156-761-1135

US-10-230-52-14

US-09-954-314-14

US-09-902-852-14

US-09-902-853-6

US-09-773-748-1

US-09-940-037A-29

US-10-237-26-1

US-09-940-037A-29

US-10-237-46-82

US-10-237-46-82

US-10-242-074-82
                                                                                                                                                                                                                                                                                                        Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                             629382 segs, 167460630 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                 Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                            protein search, using sw model
                                                                                                                                                                                                                                BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                          seq length: 0
seq length: 200000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 112
112
113
113
113
                                                                                                                                                                     US-09-673-918A-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query
Match Length DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     888.5
335.0
2227.0
225.0
225.0
227.0
223.8
233.8
233.8
                                                                                                                                                                     Title:
Perfect score:
                                                                                                                                                                                                                               Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1233
487.5
487.5
432
380.5
380.5
349.5
349.5
343.5
341.5
341.5
343.5
```

ö

Gaps

0;

S No Result

N

```
q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                       69 VTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFLC 128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   129 MKHAARVMIP-ARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRV 187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             122 IKHAAKAMIKGGRGGSIICTSSSSGLMGGLGGHAYTLSKGGINGVVRTTECELGSHGIRV 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       188 NCLSPFGLPT----ALGKKFSGIK-NEEFFENVINFAGN-LKGPKFNVEDVANAALYLA 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            182 QFGIRVNCLSPFGLPTALGKKFSGIKNEEEFENVINFAGNLKGPKFNVEDVANAALYLAS 241
VTGVFLCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELG 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            68
                                                                                                                                                                                                                                                                                                Sequence 8, Application US/1034224

Publication No. US2003016224A1

GENERAL INFORMATION:
APPLICANT: Nathalie Verbruggen

TITLE OF INVENTION: Genes Involved in Tolerance to Environmental Stress
FILE REFERENCE: CNN-012US

CURRENT APPLICATION NUMBER: US/10/342,224

CURRENT FILING DATE: 2003-01-13

PRIOR APPLICATION NUMBER: US/09/762,154

PRIOR SELING DATE: 1298-08-04

NUMBER OF SEQ ID NOS: 123

SOFTWARE: FRASEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    6 KRLFEKVAIITGGARGIGAATARLFTENGAYVIVADILDNEGILVAESIG---GCYVHCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            9 RRLEGKVALITGGASGIGETTAKLFSOHGAKVAIADVQDELGHSVVEAIGTSNSTYIHCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    13; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB 12; Length 272;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
35.0%; Score 487.5; DB 12; Length
Best Local Similarity 44.2%; Fred. No. 16e-40.
Matches 118; Conservative 45; Mismatches 91; Indels
Matches 118; Conservative 45; Mismatches 91; Indels
                                                                                                                                                                                    245 DEAQYVSGQNLFIDGGFSVCNSAIKLFQYPDS 276
                                                                                                                                                             242 DEAKYVSGHNLFIDGGFSVCNSVIKVFQYPDS 273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   242 SQESSGFITGHNLVVDGGYTSATSTMR 268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    241 SDEAK-YVSGHNLFIDGGFSVCNSVIK 266
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 11842, Application US/09815242
; Patent NO. US/202061569A1
; APPLICANT: Haselbeck, Robert
APPLICANT: Oblisen, Kari L.
; APPLICANT: Zyskind, Judith W.
APPLICANT: Wall, Daniel
; APPLICANT: Tawick, John D.
; APPLICANT: Tawick, John D.
; APPLICANT: Yamanoto, Robert T.
; APPLICANT: Yamanoto, Robert T.
; APPLICANT: Yamanoto, Robert T.
; APPLICANT: Xu, H. Howard
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TYPE: PRT
ORGANISM: Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            09-815-242-11842
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQ ID NO 8
LENGTH: 272
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-10-342-224-8
  122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                              qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ωp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                   g
                                                                           à
                                                                                                                                                   $ g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
    ò
```

```
RVNCLSPFGLPTALGKK-FSGIKNEEFFENVINFAGNLKGPKFNVEDVANAALYLASDEA 244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         66 HCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FLCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8 ARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAI--GTSNSTYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match 31.0%; Score 432; DB 9; Length 253; Best Local Similarity 37.5%; Pred. No. 5.2e-35; Matches 95; Conservative 52; Mismatches 98; Indels
TITLE OF INVENTION: Identification of Essential Genes in TITLE OF INVENTION: Prokaryotes CURRENT APPLICATION NUMBER: US/09/815,242 CURRENT APPLICATION NUMBER: US/09/815,242 CURRENT APPLICATION NUMBER: US/09/815,242 CURRENT FILING DATE: 2001-03-21 PRIOR FILING DATE: 2000-03-21 PRIOR FILING DATE: 2000-03-21 PRIOR FILING DATE: 2000-05-23 PRIOR FILING DATE: 2000-05-26 PRIOR FILING DATE: 2000-05-26 PRIOR FILING DATE: 2000-10-33 PRIOR FILING DATE: 2000-10-33 PRIOR FILING DATE: 2000-10-23 PRIOR FILING DATE: 2000-11-27 PRIOR FILING DATE: 2000-11-27 PRIOR FILING DATE: 2000-11-27 PRIOR FILING DATE: 2000-11-22 PRIOR FILING DATE: 2000-11-22 PRIOR FILING DATE: 2000-11-22 PRIOR FILING DATE: 2001-12-22 PRIOR FILING DATE: 2001-02-16 PRIOR FILING PRIOR FILING PRIOR FILING PRIOR FILING PRIOR F
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: OMUGA, SATOSHI
APPLICANT: IKEDA, HARUO
APPLICANT: IKEDA, HARUO
APPLICANT: ISHIKAWA, JUN
APPLICANT: HORIKAWA, HIROSHI
APPLICANT: SHIRBA, TADAVOSHI
APPLICANT: SAKAKI, YOSHIYUKI
APPLICANT: SAKAKI, YOSHIYUKI
APPLICANT: APARORI, WASAHIRA
ITILE OF INVENTION: NOVEL POLYNUCLEOTIDES
TITLE OF INVENTION: NOVEL POLYNUCLEOTIDES
CURRENT FILING DATE: 2002-05-29
PRIOR APPLICATION NUMBER: JP 2001-204089
PRIOR PLILING DATE: 2001-05-30
PRIOR APPLICATION NUMBER: JP 2001-204089
PRIOR PLILING DATE: 2001-05-30
PRIOR APPLICATION NUMBER: JP 2001-272697
NUMBER OF SEQ ID NOS: 15109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 4
US-10-156-761-11335
Sequence 11335, Application US/10156761
; Publication No. US20030119018A1
; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LENGTH: 253
FYPE: PRT
OYANISM: Pseudomonas aeruginosa
US-09-815-242-11842
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             245 KYVSGHNLFIDGG 257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    237 GFTTGIALPVDGG 249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           186
```

180

185

125

```
NCLSPFGLPTALGKKFSGIKNEEEFENVINFAGNLKGPKFNVEDVANAALYLASDEAKYV 247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match 26.5%; Score 369; DB 10; Length 2 Best Local Similarity 35.7%; Pred. No. 1.1e-28; Matches 91; Conservative 55; Mismatches 101; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; Sequence 14, Application US/10230562; Publication No. US20030113886A1; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; ORGANISM: Brevibacterium sp HCU US-09-954-314-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        240 SFITGAVLPVDGGYT 254
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                245 KYVSGHNLFIDGGFS 259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: Rouviere, Pierre E APPLICANT: Brzostowicz, Patri
                                                                                                                        245 NATDFLVDGGIS 256
                                                                                             248 SCHNLFIDGGFS 259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-10-230-562-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LENGTH: 256
                    188
                                              셤
                                                                                             ò
                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                 60 GREDDWQAAVTVAKDAYGHIDGLVNNAGILRFN--DLVGTPLAEFQQIVQVNQVGVFLGI 117
                                                                                                                                                                                                                                                                                                                                                    130 KHAARVMIPARSGNIISTASLSSTWGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRVNC 189
                                                                                                                                                                                                                                                                                                                                                                               69 VINEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFLC 128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        70 TNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFLCM 129
                                                                                                                                                                                                                                                                                                                                                                                                                                  190 LSPFGLPTALGKKFS---GIKNEEEFENVINFAGNL--KGPKFNVEDVANAALYLASDEA 244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           129 MKHAARVMIPARSGNIISTASLSSTMGGGSSH-AYCGSKHAVLALTRNLAVELGQFGIRV 187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      10 RLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTYIHCDV 69
                                                                                                                                                                                                                    3 KLDGRVVLISGAARGQGEQEARLFVEEGAKVVVADVLDDQGEALAKEIG---ARYVHLDV 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9 RRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTYIHCD 68
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB 15; Length 263;
                                                                                                                Length 258;
                                                                                                                27.4%; Score 382; DB 15; Length 2:
36.8%; Pred. No. 5.4e-30;
ive 46; Mismatches 109; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    27.3%; Score 380.5; DB 1.
larity 35.3%; Pred. No. 7.9e-30;
Conservative 48; Mismatches 108
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 14255, Application US/10156761
Sequence 14255, Application US/10156761
GENERAL INFORMATION:
APPLICANT: IKEDA, HARUO
APPLICANT: IKEDA, HARUO
APPLICANT: SHIKAWA, JUN
APPLICANT: SHIKAWA, JUN
APPLICANT: SHIRA, TADAYOSHI
APPLICANT: SHIRA, TADAYOSHI
APPLICANT: SHIRA, TOSHIVUKI
APPLICANT: SHIRA, TOSHIVUKI
APPLICANT: SHIRA, TADAYOSHI
APPLICANT: SHIRA, TADAYOSHI
APPLICANT: SHIRA, TADAYOSHI
APPLICANT: SHIRA, TOSHIVUKI
APPLICANT: SHIRA, TOSHIVUKI
APPLICANT: SHIRA, TOSHIVUKI
APPLICANT: SHIRA, TOSHIVUKI
APPLICANTON: NOVEL POLYNUCLEOTIDES
CURRENT FILING DATE: 2001-05-39
FRIOR FILING DATE: 2001-05-39
FRIOR FILING DATE: 2001-06-39
FRIOR FILING DATE: 2001-06-30
NUMBER OF SEQ ID NOS: 15109
SEQ ID NO 14255
LENGTH: 263
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                245 KYVSGHNLFIDGGFSVCNSVI 265
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    238 SYITGOPFVIDGGWLAGVSVI 258
                                    ; TYPE: PRT
; ORGANISM: Streptomyces avermitilis
US-10-156-761-11335
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ORGANISM: Streptomyces avermitilis
                                                                                                                                                       96; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local Similarity
Matches 89; Conserv
                                                                                                                                  Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-10-156-761-14255
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-10-156-761-1425
SEQ ID NO 11335
                                                                                                                                                                                                                                                                                                                                                                                             118
                                                                                                                  Query Match
                                                                                                                                                   Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                  ठे
                                                                                                                                                                                                                                                                                                                                                                               a
                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ઠે
                                                                                                                                                                                             ò
```

```
US-09-954-314-14
US-09-954-314-14
Sequence 14, Application US/09954314
Sequence 14. Application US/09954314
Sequence 14. Application US/09954314
Sequence 14. Application US-02502012766641
GENERAL INFORMATION:
APPLICANT: Brostewicz, Patricia C.
TITLE OF INVENTION: GENES AND ENZYMES FOR THE PRODUCTION OF ADIPIC ACID INTERMEDIATES
TILE PETRENCE: BC1001 US NA
CURRENT APPLICATION NUMBER: 105/09/954,314
CURRENT FILING DATE: 2001-09-17
PRIOR PILING DATE: 2001-09-17
PRIOR FILING DATE: 1099-February-19
NUMBER OF SEQ ID NOS: 49
SOFTWARE: Microsoft Office 97
SEC ID NO 14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   68 DVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFL 127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     128 CMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRV 187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 188 NCLSPFGLPTALGKKFSGIKNEEEFENVINFAGNLKGPKFNV---EDVANAALYLASDEA 244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         10 RLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSN--STYIHC 67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     3 RLGGKVAVITGGAAGMGRIQSELYASEGAQVAVVDVNEQEGRATADAIRASGGVANYWKL 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: Brzostowicz, Patricia C
TITLE OF INVENTION: GENES AND ENZYMES FOR THE PRODUCTION OF ADIPIC ACID
TITLE OF INVENTION: UNTERMEDIATES
FILE REFERENCE: BC-1001
CURRENT APPLICATION NUMBER: US/10/230,562
CURRENT APPLICATION NUMBER: US/10/230,562
PRIOR FILING DATE: 2002-08-29
PRIOR PILING DATE: 1999-02-19
SOFTWARE: Microsoft Office 97
SEQ ID NO 14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
```

```
US-10-307-385-6

US-10-307-385-6

Sequence 6, Application US/10307385

Publication No. US20030077797A1

SEQUENCE 6, Application No. US20030077797A1

SEQUENCE 7. USZUZI, SHORTON

APPLICANT: SUGITYAMA, MASAKAZU

APPLICANT: SUGITYAMA, MASAKAZU

APPLICANT: TONOUCHI, NAOTO

ITILE OF INVENTION: XYLITOL DEHYDROGENASE OF ACETIC ACID BACTERIA AND GENE THEREOF

FILE REFERENCE: 010-0104-0

CURRENT FILING DATE: 1002-12-02

PRIOR FILING DATE: 1099-07-26

PRIOR FILING DATE: 1999-07-26

PRIOR FILING DATE: 1999-07-26

PRIOR FILING DATE: 1999-07-26

SOFTWARE PERLICATION NUMBER: JED-216047

PRIOR FILING DATE: 1999-07-30

NUMBER OF SEQ ID NOS: 16

SOFTWARE PALCENTIN VERSION 3.0

SOFTWARE PALCENTIN VERSION 3.0

SEQ ID NO 6

LENGTH: 262

LENGTH: 262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      65 IHCDVINEDGVKNAVDNIVSIYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTG 124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         125 VFLCMKHAARVMIPARSGNIISTASLSSTWGGGSSHAYCGSKHAVLALTRNLAVELGQFG 184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 185 IRVNCLSP------FGLPTALGKKFSGIKNEEFFENVINFAGNLKGPKF-NVED 231
180 IRVNAISPGYMGPGFMWERQVELQAKVGSQYFSTDPKVVAQQMI---GSVPMRRYGDINE 236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8 ARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDEL---GHSVVEAIGTSNSTY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         21;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 262;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT: Mada, Masaru
TITLE OF INVENTION: Levodione reductase gene and use thereof
FILE REFRENCE: Levodione reductase
CURRENT APPLICATION NUMBER: US/09/773,748
CURRENT APPLICATION NUMBER: 2001-01-31
PRIOR APPLICATION NUMBER: EP00101665.8
PRIOR FILING DATE: 2000-02-01
NUMBER OF SEQ ID NOS: 2
SOFTWARE: PatentIn Ver. 2.1
SEQ ID NO 1
LENGTH: 267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match

25.1%; Score 349.5; DB 15; Length :
Best Local Similarity 31.2%; Pred. No. 99-27;
Matches 83; Conservative 55; Mismatches 107; Indels
                                      257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    232 VANAALYLASDEAKYVSGHNLFIDGG 257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          232 VANAALYLASDEAKYVSGHNLFIDGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 1, Application US/09773748 Publication No. US20020187537A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TYPE: PRT ORGANISM: Gluconobacter oxydans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-10-307-385-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -09-773-748-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           pp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Db
                                      δ
                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence (a) Application US/09802853

Patent No. US20010034049A1

GENERAL INFORMATION:
APPLICANT: SUCIYAMA, MASAKAZU
APPLICANT: TOOUGHII, NACTO
APPLICANT: SUCIXAN, MASAKAZU
APPLICANT: TOOUGHII, NACTO
APPLICANT: VOXOZEKI, SHUNICHI
CURRENT SUCIKI, SHUNICHI
APPLICANT: VOXOZEKI, SUCIO
APPLICANT: VOXOZEKI, SUCIO
APPLICANT: VOXOZEKI, SUCIO
APPLICANT: VOXOZEKI, SUCIO
APPLICANT: ON UNBER: US/09/802,853
CURRENT FILING DATE: 1999-07-29
PRIOR APPLICATION NUMBER: US/09/83,189
PRIOR FILING DATE: 1998-07-29
PRIOR APPLICATION NUMBER: JP10-216047

PRIOR FILING DATE: 1998-07-30

NUMBER OF SEQ ID NOS: 16

SEQ ID NO 6

SEQ ID NO 6

LENGTH: 262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              120 AFHVLKAVSRQMITQNYGRIVNTASMAGVKGPPNMAAYGASKGAIIALTETAALDLAPYN 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     IHCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTG 124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | IRVNCLSP------FGLPTALGKKFSGIKNEEEFENVINFAGNLKGPKF-NVED 231
                                                                                                                                                                                                                                                                                   125 VFLCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFG 184
                                                                                                                                                                                                                                                            68 DVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFL 127
                                                                                                                                                                                                                                                                                                                                        128 CMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRV 187
                                                                                                                                                                                                                                                                                                                                                                                                                       188 NCLSPFGLPTALGKKFSGIKNEEEFENVINFAGNLKGPKFNV---EDVANAALYLASDEA 244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61
                                                                                                                                                                                                                      62
                                                                                                                                                                             10 RLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSN--STYIHC 67
                                                                                                                                                                                                        8 ARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDEL---GHSVVEAIGTSNSTY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels 21; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
25.1%; Score 349.5; DB 9; Length 262;
Best Local Similarity 31.2%; Pred. No. 9.9e-27;
Matches 83; Conservative 55; Mismatches 107; Indels 21.
                                                                                                    Length 256;
                                                                                               26.5%; Score 369; DB 15; Length 2 35.7%; Pred. No. 1.1e-28; ive 55; Mismatches 101; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ; LENGTH: 262
; TYPE: PRT
; ORGANISM: Gluconobacter oxydans
US-09-802-853-6
                         ; TYPE: PRT
; ORGANISM: Brevibacterium sp HCU
US-10-230-562-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                240 SFITGAVLPVDGGYT 254
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   245 KYVSGHNLFIDGGFS 259
                                                                                                                                           91; Conservative
                                                                                                      Query Match
Best Local Similarity
Matches 91, Conserv
      LENGTH: 256
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       .09-802-853-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            임
                                                                                                                                                                                                                                                                                          g &
                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                              δ. q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8 6
                                                                                                                                                                                                                                                            ò
```

ઠે g ò

ò g ò 유

ઠ 8

```
Sequence 29, Application US/09940037A

Sequence 29, Application US/09940037A

Sequence 29, Application US/09940037A

Sequence 29, Application US/090127679A1

Sequence 20, Application US/090127679A1

Septimate Information:

APPLICANT: Yamamoto, Hiroaki

APPLICANT: Yamamoto, Hiroaki

TITLE OF INVENTION: NOVEL CARBONYL REDUCTASE, METHOD FOR PRODUCING SAID ENZYME, DNA

TITLE OF INVENTION: BNZYME

TITLE OF INVENTION: BNZYME

TITLE OF INVENTION: BNZYME

STITLE OF INVENTION: BNZYME

CURRENT APPLICATION NUMBER: US/09/940,037A

CURRENT PILING DATE: 1999-12-21

PRIOR FILING DATE: 1999-12-21

PRIOR PELING DATE: 1999-12-21

PRIOR PELING DATE: 1999-12-21

SPRIOR PELING DATE: 1999-12-21

NUMBER OF SEQ ID NOS: 29

SOFTWARE PREDENTION OF SEQ ID NOS: 29

SOFTWARE PATENTION OF SEQ ID NOS: 29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  63 QGDVTKEEDVKNIVQTAIKEFGTLDIMINNAGLENP----VPSHEMPLKDWDKVIGTNLT 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  179 KGIRVMNIGPGAINTPINAEKFADPKQKADVESMIPM-GYIGEP----EEIAAVAAWLAS 233
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          66 HCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEK--ADFERVLSVNVT 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  124 GVFLCMKHAARVMIPAR-SGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQ 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                183 FGIRVNCLSPFGLPTAL-GKKFSGIKNEEEFENVINFAGNLKGPKFNVEDVANAALYLAS 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       11 LEGKVALITGGASGIGETTAKLFSQHGAKVAI---ADVQD--ELGHSVVEAIGTSNSTYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: Zhang,Zemin
APPLICANT: Fong,Sherman
TITLE OF INVENTION: SECRETED AND TRANSMEMBRANE POLYPEPTIDES AND NUCLEIC
TITLE OF INVENTION: ACIDS ENCODING THE SAME
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DB 10; Length 261;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               98;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              24.5%; Score 341.5; DB 1
34.4%; Pred. No. 6.2e-26;
iive 50; Mismatches 98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              242 DEAKYVSGHNLFIDGGFSVCNSVIKVFQYP 271
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          234 KEASYVTGITLFADGGMT------QYP 254
  241 VAFLLSDDASYVNATVVPIDGGQS 264
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Goddard, Audrey
Grimaldi, J. Christopher
Gurney, Austin
Smith, Victoria
Stephan, Jean-Phillippe
Watanbe, Colin
Wood, William
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 82, Application US/10237496
Publication No. US20030138896A1
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TYPE: PRT ORGANISM: Bacillus subtilis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Best Local Similarity 34.4%
Matches 93; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: Baker, Kevin
APPLICANT: Eaton, Dan
APPLICANT: Filvaroff, Ellen
                                                                                           US-09-940-037A-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-09-940-037A-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-10-237-496-82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQ ID NO 29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT:
APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT:
  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                            ŝ
                                                                                                                                                                                                                                                                                                            70 VADVSDEAQVEAYVTATTERFGRIDGFFNNAGIEGKQNP----TESFTAAEFDKVVSINL 125
                                                                                                                                                                                                                                                                                                                                                                                                        :|||:| ::| ::| ::| XGIRINAIAPGAIWTPMVENSMKQLDPENPRKAAEEFIQV-----NPSKRYGEAPEIAAV 240
                                                                                                                                                                                                                                                                                 66 HCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEK---ADFERVLSVNV 122
                                                                                                                                                                                                                                                                                                                                                                            TGVFLCMMHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQ 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        183 FGIRVNCLSPFGLPTALGKKF-----SGIKNEEEFENVINFAGNLKGPKFNVEDVANA 235
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 HCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEK---ADFERVLSVNV 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         70 VADVSDEAQVEAYVIATTERFGRIDGFFNNAGIEGKQNP----TESFTAAEFDKVVSINL 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TGVFLCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQ 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         126 RGVFLGLEKVLKIMREQGSGMVVNTASVGGIRGIGNOSGYAAAKHGVVGLTRNSAVEYGR 185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FGIRVNCLSPFGLPTALGKKF-----SGIKNEEEFENVINFAGNLKGPKFNVEDVANA 235
                                                                                                                                                                                      10 RLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDE----LGHSVVEAIGTSNSTYI 65
                                                                                                                                                                                                                      10 RFTDRVVLITGGGSGLGRATAVRLAABGAKLSLVDVSSBGLBASKAAVLETAPDAEVLTT 69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RLEGKVALITGGASGIGETTAKLFSQHGAKVALADVQDE----LGHSVVEAIGTSNSTYI
                                                                                                                                            Gaps
                                                                                                                                       Indels 23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 1, Application US/1032726
| Publication No. US20030138921A1
| GENERAL INFORMATION:
| APPLICANT: Wada, Masaru
| TITLE OF INVENTION: Levodione reductase gene and use thereof
| FILE REPERENCE: Levodione reductase
| CURRENT APPLICATION NUMBER: US/10/327,726
| CURRENT FILING DATE: 2002-12-23
| PRIOR APPLICATION NUMBER: US/09/773,748
| PRIOR FILING DATE: 2001-01-31
| PRIOR FILING DATE: 2001-01-31
| NUMBER OF SEQ ID NOS: 2
| SOFTWARE: Patentin Ver. 2.1
| SEQ ID NOS: 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 267;
                                                                                             Length 267;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                             DB 10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DB 12;
                                                                                      Ouery Match 24.7%; Score 343.5; DB 10; Best Local Similarity 33.3%; Pred. No. 4.1e-26; Matches 88; Conservative 48; Mismatches 105;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     24.7%; Score 343.5; DB 12;
larity 33.3%; Pred. No. 4.1e-26;
Conservative 48; Mismatches 105;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     236 ALYLASDEAKYVSGHNLFIDGGFS 259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  241 VAFLLSDDASYVNATVVPIDGGOS 264
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     236 ALYLASDEAKYVSGHNLFIDGGFS 259
  ; TYPE: PKT
; ORGANISM: Corynebacterium aquaticum
US-09-773-748-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     : Corynebacterium aquaticum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
88; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 11
US-10-327-726-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LENGTH: 267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-10-327-726-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local S:
Matches 88
                                                                                                                                                                                                                                                                                                                                                                            123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        186
TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ORGANISM
```

a ò В g ò 셤 ò

ò

```
US-10-242-505-82
Sequence 82, Application US/10242505
Sequence 82, Application US/10242505
Publication No. US20030138898A1
GENERAL INFORMATION:
APPLICANT: Baker, Kevin
APPLICANT: Filvaroff, Bllen
APPLICANT: Gadard, Audrey
APPLICANT: Grimaldi, J. Christopher;
APPLICANT: Grimaldi, J. Christopher;
APPLICANT: Grimaldi, J. Christopher;
APPLICANT: Shith, Victoria
APPLICANT: Shith, Victoria
APPLICANT: Watanbe, Colin
APPLICANT: Wead, William
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |:|: ||||:
232 VTGNPVIIDGGWSL 245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                247 VSGHNLFIDGGFSV 260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TYPE: PRT
CORGANISM: Homo Sapien
US-10-242-074-82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           60 TK----KKQIDQFASEVERLDVLFNVAGF--VHHGTVLDCEEKDWDFSMNLAVRSMYLMI 113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              10 THEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFLCM 129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    130 KHAARVMIPARSGNIISTASLSSTMGGGSSH-AYCGSKHAVLALTRNLAVELGQFGIRVN 188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 189 CLSPFGLPT-ALGKKFSGIKNEEFFENVINFAGNLKGPKF-NVEDVANAALYLASDEAKY 246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ||:||| ::| | |||: | ||: || ||: || ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    10 RLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTYIHCDV 69
CURRENT PAPLICATION NUMBER: US/10/237,496

CURRENT PAPLICATION NUMBER: 06/05-06

PRIOR APPLICATION NUMBER: 10/197942

PRIOR PAPLICATION NUMBER: 10/197942

PRIOR PILING DATE: 2002-07-18

PRIOR PILING DATE: 1997-09-17

PRIOR PILING DATE: 1997-09-17

PRIOR PAPLICATION NUMBER: 60/065014

PRIOR PILING DATE: 1997-10-24

PRIOR PILING DATE: 1997-110-24

PRIOR PILING DATE: 1998-03-27

PRIOR PILING DATE: 1998-03-27

PRIOR PILING DATE: 1998-03-27

PRIOR PILING DATE: 1998-03-27

PRIOR PILING DATE: 1998-06-18

PRIOR PILING DATE: 1998-06-25

PRIOR PILING DATE: 1998-06-25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            98; Indels 14; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
23.8%; Score 332; DB 12; Length 245;
Best Local Similarity 33.5%; Pred. No. 5.1e-25;
Matches 85; Conservative 57; Mismatches 98; Indels 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 82, Application US/10242074
Publication No. US20030138897A1
GENERAL INFORMATION:
APPLICANT: Baker, Kevin
APPLICANT: Bateon, ban
APPLICANT: Falvon Coff, Ellen
APPLICANT: Falvon Coff, Ellen
APPLICANT: Grimaldi, J. Christopher
APPLICANT: Grimaldi, J. Christopher
APPLICANT: Grimaldi, J. Christopher
APPLICANT: Grimaldi, J. Christopher
APPLICANT: Smith, Victoria
APPLICANT: Stephan, Jean-Phillippe
APPLICANT: Watanbe, Colin
APPLICANT: Watanbe, Colin
APPLICANT: Watanbe, Colin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              247 VSGHNLFIDGGFSV 260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |:|: ||||:
232 VTGNPVIIDGGWSL 245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Zhang, Zemin
Fong, Sherman
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TYPE: PRT
CORGANISM: Homo Sapien
US-10-237-496-82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
```

```
TITLE OF INVENTION: SECRETED AND TRANSMEWBRANE POLYPEPTIDES AND NUCLEIC TITLE OF INVENTION: ACIDS ENCODING THE SAME FILE REPERSERS: 1930/30/18.19

CURRENT APPLICATION NUMBER: US/10/242,074

CURRENT FILING DATE: 2002-09-11

PRIOR PPLICATION NUMBER: 60/059114

PRIOR PPLING DATE: 1997-00-17

PRIOR PPLING DATE: 1997-10-217

PRIOR PLING DATE: 1998-03-27

PRIOR PLING DATE: 1998-03-27

PRIOR PPLING DATE: 1998-06-02

PRIOR PLING DATE: 1998-06-02
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    70 TNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNYTGVFLCM 129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      130 KHAARVMIPARSGNIISTASLSSTMGGGSSH-AYCGSKHAVLALTRNLAVELGQFGIRVN 188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     189 CLSPFGLPT-ALGKKFSGIKNEEBFENVINFAGNLKGPKF-NVEDVANAALYLASDEAKY 246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           10 RLEGKVALITGGASGIGETTAKLFSQHGAKVALADVQDELGHSVVEAIGTSNSTYIHCDV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
23.8%; Score 332; DB 12; Length 245;
Best Local Similarity 33.5%; Pred. No. 5.1e-25;
Matches 85; Conservative 57; Mismatches 98; Indels 14
```

```
APPLICANT: FONG, Sherman

TITLE OF INVENTION: SECRETED AND TRANSMEMBRANE POLYPEPTIDES AND NUCLEIC

TITLE OF INVENTION: ACIDS ENCODING THE SAME

TITLE OF INVENTION: ACIDS ENCODING THE SAME

TITLE OF INVENTION NUMBER: US/10/242,505

CURRENT FILING DATE: 2002-09-11

PRIOR PELLING DATE: 1097-09-17

PRIOR APPLICATION NUMBER: 60/063046

PRIOR FILING DATE: 1997-01-10

PRIOR FILING DATE: 1997-11-10

PRIOR FILING DATE: 1997-11-10

PRIOR FILING DATE: 1997-11-10

PRIOR FILING DATE: 1997-03-27

PRIOR FILING DATE: 1998-03-27

PRIOR FILING DATE: 1998-03-27

PRIOR FILING DATE: 1998-03-27

PRIOR FILING DATE: 1998-06-02

PRIOR FILING DATE: 1998-06-02

PRIOR PLING DATE: 1998-06-02

PRIOR PLING DATE: 1998-06-04

PRIOR FILING DATE: 1998-06-05

PRIOR PLING DATE: 1998-06-24

PRIOR PLING DATE: 1998-06-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             189 CLSPFGLPT-ALGKKFSGIKNEEFFENVINFAGNLKGPKF-NVEDVANAALYLASDEAKY 246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     70 TNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFLCM 129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               60 TK----KKQIDQFASEVERLDVLFNVAGF--VHHGTVLDCEEKDWDFSWILNVRSMYLMI 113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           130 KHAARVMIPARSGNIISTASLSSTMGGGSSH-AYCGSKHAVLALTRNLAVELGOFGIRVN 188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     10 RLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTYIHCDV 69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             23.8%; Score 332; DB 12; Length 245; 33.5%; Pred. No. 5.1e-25; Live 57; Mismatches 98; Indels. 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   247 VSCHNLFIDGGFSV 260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |:|: ||||:|:
232 VTGNPVIIDGGWSL 245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ORGANISM: Homo Sapien
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local Similarity
Matches 85, Conserve
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-10-242-505-82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠે
```

Search completed: October 23, 2003, 13:00:39 Job time : 69 secs

THIS PAGE BLANK (USPTO)

```
GenCore version 5.1.6
Copyright (c) 1993 - 2003 Compugen Ltd.
```

OM protein - protein search, using sw model

October 23, 2003, 12:45:39; Search time 40 Seconds (without alignments) 656.351 Million cell updates/sec Run on:

US-09-673-918A-2 1393 1 MQLRTAFARRLEGKVALITG......IDGGFSVCNSVIKVFQYPDS 273 Title: Perfect score: Sequence:

BLOSUM62 Gapop 10.0 , Gapext 0.5 Scoring table:

283308 segs, 96168682 residues Searched:

283308 Total number of hits satisfying chosen parameters:

Minimum DB seq length: 0 Maximum DB seq length: 200000000

Post-processing: Minimum Match 0% Maximum Match 100% Listing first 45 summaries

PIR 76:*
1: pir1:*
2: pir2:*
3: pir3:*
4: pir4:* Database :

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

		d			SOMMERTES	
Result No.	Score	Query	Length	DB	ID	Description
-	734	52.7	267	7	_T11579	probable short cha
7	685	49.2	284	7	T02257	
m	658.5	47.3	285	~	F96563	hypothetical prote
4	625.5		303	7	T46064	in a
ស	597.5	42.9	283	~	H85039	probable alcohol d
9	588.5	42.2	336	7	A47542	short-chain alcoho
7	575.5	41.3	264	7	T02174	probable alcohol d
80	567	40.7	257	7	T02175	
σ	559	40.1	251	~	T06364	probable short-cha
10	549.5	39.4	258	N	T02176	probable alcohol d
11	499.5	35.9	234	7	T03734	short chain alcoho
12	490.5	٠ س	272	7	T47354	alcohol dehydrogen
13	432	ä	253	~	F83440	probable short-cha
14	402.5	œ.	258	7	C70885	probable dehydroge
15	398	ന	256	7	A10406	probable dehydroge
16	396	28.4	255	Н	839737	glucose 1-dehydrog
17	386	\sim	255	~	G82644	2,5-dichloro-2,5-c
18	381.5	7	256	7	E72427	oxidoreductase, sh
19	370.5	ú	260	~	T36846	probable dehydroge
20	366	26.3	260	~	H70758	probable fabG3 pro
21	363	'n	246	~	H72219	- (acy
22	363		254	7	AC1478	dehydrogenase/redu
23	363	ω.	254	~	AI1117	dehydrogenase/redu
24	361.5	ė	296	~	726	hypothetical prote
25	357	ū.	248	~	52	oxoacyl (carrier p
56	357	ů.	248	7	D72096	3-oxoacyl-(acyl-ca
27	356.5	25.6	4	~	F83838	oxidoreductase (sh
28	35	25.6	246	~	H84136	3-oxoacyl-(acyl-ca
29	353.5	25.4	æ	~	F91082	probable oxidoredu

probable short chain alcohol dehydrogenase - common tobacco C;Species: Nicotiana tabacum (common tobacco) C;Date: 05-Mar-1999 #sequence_revision 05-Mar-1999 #text_change 21-Jul-2000 C;Accession: T00257 R;Herbers, K.; Moenke, G.; Badur, R.; Sonnewald, U. Bjant Mol. Biol. 29, 1027-1038, 1995 A;Title: A simplified procedure for the subtractive cDNA cloning of photoassimilate-respondance number: S62699; MUID:96145513; PMID:8555446

RESULT 2

probable oxidoredu	oxidoreductase, sh	dehydrogenase homo	dehydrogenase homo	oxidoreductase, sh	probable dehydroge	probable [imported	hypothetical prote	glucose 1-dehydrog	oxidoreductase, sh	glucose 1-dehydrog	hypothetical prote	hypothetical prote	hypothetical prote	probable 3-ketoacy	2-deoxy-D-gluconat
G85927	B82181	AB1717	AG1346	G72389	B65059	F95284	E87279	F69868	A72395	D69629	C87474	D90481	D70635	B97223	F69400
7	7	~	~	7	-	7	7	~	7	~	~	7	~	7	7
286	252	253	253	251	286	257	261	248	257	261	521	299	255	248	281
25.4	25.0	24.9	24.9	24.8	24.8	24.8	24.7	24.6	24.5	24.5	24.5	24.3	24.1	24.0	24.0
'n	8.5	46.5	46.5	346	45.5	345	343.5	343	341.5	341.5	341	339	336	334.5	334.5
353.	34	m	m		m		.,			٠,					٠,

ALIGNMENTS

RESULT	1. T. O. D. C.
probal	probable short chain alcohol dehydrogenase CPRD12, drought-inducible - cowpea
C; Date	C.Date: 05-Nov-1999 #sequence_revision 05-Nov-1999 #text_change 20-Jun-2000 C.Accession: 711579
R; Iuc	hi, S.; Yamaguchi-Shinozaki, K.; Urao, T.; Shinozaki, K.
A, Tit	o. Franc Res. 103, 413-424, 1330 A;Title: Characterization of two cDNAs for novel drought-inducible genes in the highly di
A;Ref	A;Reference number: Z17293 A;Accession: T11579
A;Sta	A;Status: preliminary; translated from GB/EMBL/DDBJ A:Molecule type: mRNA
A; Res	A; Residues: 1-267 <iuc></iuc>
A, Cro C, Sup	A;cross-reterences: EMBL:D8121 C;Superfamily: ribitol dehydrogenase; short-chain alcohol dehydrogenase homology
Que	Query Match 52.7%; Score 734; DB 2; Length 267;
Mat	ative 4.
δ	9 RRLEGKVALITGGASGIGETTAKLFSQHGAKVALADVQDELGHSVVEAIGTSNSTYIHCD 68
q	:
ζ	69 VINEDGVKNAVDNIVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFLC 128
q	10 VTKEEDIEKCVDTAVSKFGKLDIMFNNAGTGDEFKKSILDNTKSDFERVISVNLVGPFLG 129
δ	129 MKHAARVMIPARSGNIISTASLSSTWGGGSSHAYCGSKHAVLALTRNLAVELGGFGIRVN 188
අු	130 TKHAARVMIPARRGCIINTASVAGCIGGGATHAYTSSKHALVGLTKNTAVELGQPGIRVN 189
ò	189 CLSPFGLPTALGKKFSGIKNEEBFENVINFAGNLKGPKFNVEDVANAALYLASDEAKYVS 248
qq	190 CVSPFAIVTPLLNKYFNLDEEGVRKTYMNLKGWYPVPNDVAEAALYLASDESKFVS 245
ò	249 GHNLFIDGGFSVCNSVIKVPQ 269
qq	246 SHNLVIDGGLINSNVGFPMFE 266

ж.;

```
probable alcohol dehydrogenase [imported] - Arabidopsis thaliana (Species: Arabidopsis thaliana (mouse-ear cress) (Species: Arabidopsis thaliana (mouse-ear cress) (Spacesion: HSE03) (Spacesion: H8503) (Spacesion: H8503)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                Association alcohol dehydrogenase-like protein - Arabidopsis thaliana short-chain alcohol dehydrogenase-like protein - Arabidopsis thaliana (Listernate names) protein 1780N4-60 (Species: Arabidopsis thaliana (mouse-ear cress) (Cispecies: Arabidopsis thaliana (mouse-ear cress) (Cispecies: Arabidopsis thaliana (mouse-ear cress) (Cispecies: Tatolo #sequence_revision 04-Feb-2000 #text_change 04-Mar-2000 (Speciession: Tatolo #serger, C.; Cooke, R.; Grellet, F.; Laudie, M.; Mewes, H.W.; Lemcke, K.; Ribelseny, M.; Berger, C.; Cooke, R.; Grellet, F.; Laudie, M.; Mewes, H.W.; Lemcke, K.; Riberues number: Z23013 A; Reference number: Z23013 A; Reference number: Z3013 A; Roberue type: DNA A; Molecule type: DNA A; Molecule type: DNA A; Residues: 1-303 < DEL>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Map position: 3
A;Introns: 31/2
A;Note: TINN14.60
C;Superfamily: ribitol dehydrogenase; short-chain alcohol dehydrogenase homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   195 GIRVNCVSPYAVATKLA--LAHLPEEERTEDAFVGFRNFAAANANLKGVELTVDDVANAV 252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                64 ---YIHCDVTNEDGVKNAVDNŢVSTYGKLDIMFSNAGI--SDPNRPRIIDNEKADFERVL 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   146 RVNVRGVGLGMKHGARAMIKRGFKGCIISTASVAGVMGGMGPHAYTASKHAIVGLTKNAA 205
   135 GAFLSMKHAARVMIPEKKGSIVSLCSVGGVVGGVGPHSYVGSKHAVLGLTRSVAAELGQH 194
                                                                                                         184 GIRVNCLSPFGLPTALGKKFSGIKNEEEFENVI----NFA---GNLKGPKFNVEDVANAA 236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             119 SVNVTGVFLCMKHAARVMIP-ARSGNIISTASLSSTWGGGSSHAYCGSKHAVLALTRNLA 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    206 CELGKYGIRVNCISPFGVATSMLVNAWRKTSGGDVEDDDVEEMEEFVRSLANLKGETLRA 265
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     178 VELGOFGIRVNCLSPFGLPTAL----GKKFSG--IKNE--EEFENVINFAGNLKGPKFNV 229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   26 TLYPKRLEGKVAIITGGAHGIGKATVMLFARHGATVVIADVDNVAGSSLAKSLSSHKTSP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               5 TAFARRLEGKVALITGGASGIGETTAKLFSQHGAKVALADVQDELGHSVVEAIGTSNST-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 303;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
44.9%; Score 625.5; DB 2; Length:
Best Local Similarity 47.5%; Pred. No. 3.8e-42;
Matches 131; Conservative 52; Mismatches 78; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A;Cross-references: EMBL:AL132968
A;Experimental source: cultivar Columbia; BAC clone T18N14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      230 EDVANAALYLASDEAKYVSGHNLFIDGGFSVCNSVI 265
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             266 NDIAEAALYLASDESKYVNGHNLVVDGGVTTARNCV 301
                                                                                                                                                                                                                                             237 LYLASDEAKYVSGHNLFIDGGFSVCNSVIKVFQ 269
                                                                                                                                                                                                                                                                                        253 LFLASDDSRYISGDNLMIDGGFTCTNHSFKVFR 285
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-283 <STO>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                C;Genetics:
                                                                                                                                                                   셤
                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      QQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            dd
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                     ò
                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Pyg6563

Pyg6561

Pyg6562

Pyg6563

Cybate: O2-Mar-2001 #sequence_revision 02-Mar-2001 #text_change 23-Mar-2001

Rytheologis, A.; Ecker, U.R.; Palm, C.J.; Federspiel, N.A.; Kaul, S.; White, O.; Alonso, Nature 408, 816-820, 2000

Angture 408, 816-820, 2000

Angture 408, 816-820, 200

Anthors: Burber, T.; Din, Y.; Din, S.X.; Liu, Z.A.; Luros, J.S.; Maiti, R.; Marziali, R.; Authors: Salzberg, S.L.; Schwartz, J.R.; Shinn, P.; Southwick, A.M.; Sun, H.; Tallon, Ker, M.; Wu, D.; Yu, G.; Fraser, C.M.; Venter, J.C.; Davis, R.W.

Anthors: Salzberg, S.L.; Schwartz, J.R.; Shinn, C.; Davis, R.W.

Anthors: Salzberg, S.L.; Schwartz, J.R.; Shinn, P.; Southwick, A.M.; Sun, H.; Tallon, Ker, M.; Wu, D.; Yu, G.; Fraser, C.M.; Venter, J.C.; Davis, R.W.

Anthors: Salzberg, S.L.; Fraser, C.M.; Venter, J.C.; Davis, R.W.

Anthors: Postluminary

Ancession: F96563

Ancession: 
A;Accession: T02257
A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Rosidues: 1-284 <HER>
A;Rosidues: 1-284 <HER>
A;Rosicule s: 1-284 <HER>
A;Croser references: BMBL:AJ223177; NID:G2739278; PIDN:CAA11153.1; PID:G2739279
A;Experimental source: cultivar SNN; tissue-type leaf
C;Superfamily: ribitol dehydrogenase; short-chain alcohol dehydrogenase homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               5;
                                                                                                                                                                                                                                                                                                                                               ô
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         66 IFVHCNVAVESDVQNVVDATIAKFGKLDIMFSNAGIGGKSISSILDVDYDIIKTVFDVNI 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 126 VGAFFCAKHAARVMIPFKKGSIIFTASAATVVSGIVPHAYSASKGAVLGFSKNIGVELGK 185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              63 TYIHCDVINEDGVKNAVDNIVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNV 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      123 TGVFLCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQ 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FGIRVNCLSPFGLPTALGKKFSGIKNEEFFENVINFAGNLKGPKFNVEDVANAALYLASD 242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              64 YIHCDVINEDGVKNAVDNIVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVT 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   .24 GVFLCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQF 183
                                                                                                                                                                                                                                                                                                                                                                                                                 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          3 LRTAFARRIEGKVALITGGASGIGETTAKLFSQHGAKVATADVQDELGHSVVEAIGTSNS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match

47.3%; Score 658.5; DB 2; Length 285;
Best Local Similarity 50.9%; Pred. No. 8.6e-45;
Matches 139; Conservative 43; Mismatches 78; Indels 13; Gaps
                                                                                                                                                                                                                                                                                Length 284;
                                                                                                                                                                                                                                                                         Query Match
49.2%; Score 685; DB 2; Length 28
Best Local Similarity 53.8%; Pred. No. 6.8e-47;
Matches 140; Conservative 37; Mismatches 83; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DSKYVSGMNLVIDGGFSTTN 265
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EAKYVSGHNLFIDGGFSVCN 262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    qq
                                                                                                                                                                                                                                                                                                                                                                                                                 g 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ΩP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Dp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    $ 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Db
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
```

```
Best Local Similarity
Matches 120; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A;Status: preliminary
A;Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Map position: 7
A; Introns: 163/2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      C, Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Short-chain alcohol dehydrogenase (EC 1.1.1.-) - maize
C;Species: Zea mays (maize)
C;Accession: A47542
R;DeLong, A.; Calderon-Urrea, A.; Dellaporta, S.L.
Cell 74, 757-768, 1993
A;Title: Sex determination gene tasselseed2 of maize encodes a short-chain alcohol dehyd A;Reference number: A47542; MuID:93364991; PMID:8358795
A;Accession: A47542
A;Status: preliminary
A;Scatus: preliminary
A;Nolecule type: mRNA
A;Residues: 1-336 <DEL>
A;Cross-references: GB:L20621; NID:9393183; PIDN:AAC37345.1; PID:9393184
C;Superfamily: ribitol dehydrogenase; short-chain alcohol dehydrogenase homology
C;Keywords: alcohol metabolism; oxidoreductase
F;S6-238/Domain: short-chain alcohol dehydrogenase homology
                                                              A,Gene: A74g03140
A,Map position: 4
C,Superfamily: ribitol dehydrogenase; short-chain alcohol dehydrogenase homology
                                                                                                                                                                                                                                                                            4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                69 VINEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFLC 128
   GB:NC_001268; NID:g7270184; PIDN:CAB77799.1; GSPDB:GN00140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRVN 188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TOWDERE THE TOTAL THE TOTAL THE TOTAL THE TOTAL TOTAL TOTAL THE TOTAL TO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               225
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CLSPFGLPTA-----LGKKFSGIKNEEFFENVINFAGNLKGPKFNVEDVANAALYLASDE 243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       IHCDVTNEDGVKNAVDNTVSTY-GKLDIMFSNAGI---SDPNRPRIIDNEKADFERVLSV 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NVTGVFLCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVEL 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LGKKFSGIKNEEEFENVI 216
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           226 RAHGVRVNCVSPFGVATPMLINAWRQGHDDATADADRDLDLDLDLDVTVPSDQEVEKMEEVV 285
                                                                                                                                                                                                                                                                                                                                           68
                                                                                                                                                                                                                                                                                                                                                                                                            74
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              64
                                                                                                                                                                                                                                                                                                                                                                             9 RRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTYIHCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TAFARRLEGKVALITGGASGIGETTAKLFSQHGAKVALADVQDELGHSVVEAIGTSNSTY
                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                         11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  286 RGLATLKGPTLRPRDIAEAVLFLASDEARYISGHNLVVDGGVTTSRNLI 334
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            217 NFAGNLKGPKFNVEDVANAALYLASDEAKYVSGHNLFIDGGFSVCNSVI 265
                                                                                                                                                                                                        DB 2; Length 283;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DB 2; Length 336;
                                                                                                                                                                                                                                                                      86; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      88; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    42.2%; Score 588.5; DB 2, 42.2%; Pred. No. 3.8e-39; iive 50; Mismatches 88;
                                                                                                                                                                                                 Query Match 42.9%; Score 597.5; DB 2
Best Local Similarity 47.0%; Pred. No. 5.8e-40;
Matches 126; Conservative 45; Mismatches 86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AKYVSGHNLFIDGGFSVCNSVIKVFQYP 271
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GQFGIRVNCLSPFGLPTA-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local Similarity 42.2
Matches 122; Conservative
A; Cross-references:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     75
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       254
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121
                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         염
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       임
                                                                                                                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
```

```
A; Experimental source: cultivar Columbia
R; Lin, X.; Kaul, S.; Rounsley, S.D.; Shea, T.P.; Benito, M.I.; Town, C.D.; Fujii, C.Y.; I
R, Koo, H.; Moffat, K.S.; Cronin, L.A.; Shen, M.; VanAken, S.B.; Umayam, L.; Tallon, L.
euss, D.; Nierman, W.C.; White, O.; Eisen, J.A.; Salzberg, S.L.; Fraser, C.M.; Venter, J
Nature 402, 761-768, 1999
                                                                                                                                                                                                                                                                                         M.; Ron
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   M.; Roni
                                   N,Alternate names: hypothetical protein F14M4.3
C;Species: Arabidopsis thaliana (mouse-ear cress)
C;Date: 05-Mar-1999 #sequence_revision 05-Mar-1999 #text_change 16-Feb-2001
C;Accession: T02174; E84911
R;Rounsley, S.D.; Lin, X.; Kaul, S.; Shea, T.P.; Fujii, C.Y.; Mason, T.M.; Shen, Issubmitted to the EMBL Data Library, September 1998
A;Description: Arabidopsis thaliana chromosome II BAC F14M4 genomic sequence.
A;Reference number: 214609
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A;Title: Squence and analysis of chromosome 2 of the plant Arabidopsis thaliana. A;Reference number: A84420; MUID:20083487; PMID:10617197
A;Accession: B84911
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   T.M.; Shen,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    C;Superfamily: ribitol dehydrogenase; short-chain alcohol dehydrogenase homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVF 126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Residues: 1-264 <STO>
A;Cross-references: GB:AE002093; NID:g3522952; PIDN:AAC34234.1; GSPDB:GN00139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 probable alcohol dehydrogenase At2g47130 [imported] - Arabidopsis thaliana N;Alternate names: hypothetical protein F14M4.4 (Species: Arabidopsis thaliana (mouse-ear cress) (Species: Arabidopsis thaliana (mouse-ear cress) (Species: Nam-1999 #text_change 16-Feb-2001 (Spacession: T02175; D84911 (Speciession: T02175) (Sp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RVNCLSPFGLPTALGKKFSGIKNEEE-FENVINFAGNLKGPKFNVEDVANAALYLASDEA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           7 FARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTYIH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      127 LCMKHAARVMI-PARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 264;

    Arabidopsis thaliana

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Accession: T02174
A;Status: translated from GB/EMBL/DDBJ
A;Molecule type: DNA
A;Residues: 1-264 < R(DU)>
A;Residues: 1-264 < R(DU)>
A;Cross-references: EMBL:AC004411; NID:g3522932; PID:g3522952
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          41.3%; Score 575.5; DB 2;
46.9%; Pred. No. 3e-38;
live 49; Mismatches 82;
probable alcohol dehydrogenase [imported]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             245 KYVSGHNLFIDGGFSV 260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         246 AYVSGQNLAVDGGYSV 261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Gene: F14M4.3; At2g47140
```

```
probable alcohol dehydrogenase At2g47120 [imported] - Arabidopsis thaliana

N;Alernate names: hypothetical protein F14M4 5
C;Species: Arabidopsis thaliana (mouse-aar cress)
C;Date: 05-Mar-1999 #sequence_revision 05-Mar-1999 #text_change 16-Feb-2001
C;Accession: T02176, C64911
R;Rounsley, S.D.; Lin, X.; Kaul, S; Shea, T.P.; Fujii, C.Y.; Mason, T.M.; Shen, M.; Ronr submitted to the EMBL Data Library, September 1998 #text_change 16-Feb-2001
R;Rounsley, S.D.; Lin, X.; Kaul, S.; Shea, T.P.; Fujii, C.Y.; Mason, T.M.; Shen, M.; Ronr submitted to the EMBL Data Library, September 1998
A;Reference number: Z14609
A;Reference number: Z14609
A;Status: translated from GB/EMBL/DDBJ
A;Reference number: A84420; MUID:20083487; PMID:10617197
A;Status: translated from GB/EMBL/DDBJ
A;Status: translated from 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A;Note: F14M4.5
C;Superfamily: ribitol dehydrogenase; short-chain alcohol dehydrogenase homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              191 SPFGLPTALGKKFSGIKNEEFFENVINPAGNLKGPKFNVEDVANAALYLASDEAKYVSGH 250
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              70 INEDGYMAAVDNIVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVIGVFLCM 129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ||| ||::|| || :|||||::|||||::|
TNETEVEDAVKPTVEKHGKLDVLFSNAGVLEP-LESFLDFDLERFDRIMAVNVRGAAFI 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KHAARVMI-PARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRVN 188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              189 CLGPFGLPTALGK--KFSGIKNEEFFNVINFAGNLKGPKFNVEDVANAALYLASDEAKY 246
                                                                                                                                                                                                                                                                                                                                                                                   132 AARVMIPAR-SGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRVNCL 190
                                                                                                                                                                          72 EDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFLCMKH 131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A;Status: preliminary
A;Molecule type: DNA
A;Rosefubas: 1-258 <STO>
A;Crose_references: GB;AE002093; NID:g3522936; PIDN:AAC34218.1; GSPDB:GN00139
C;Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          10 RLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTYIHCDV 69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
39.4%; Score 549.5; DB 2; Length 258;
Best Local Similarity 44.5%; Pred. No. 3.3e-36;
Matches 113; Conservative 53; Mismatches 79; Indels 9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                251 NLFIDGGFSVCNSVIKV 267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      237 NLAVDGGLS---SILKL 250
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A,Gene: At2g47120; F14M4.5
A,Map position: 2
A,Introns: 5/2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ПÞ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                    ò
                                                                                                                                                                                                                                                               П
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
A;Status: translated from GB/EMBL/DDBJ
A;Mclecule type: DNA
A;Mclecule type: DNA
A;Residues: 1-257 - (ROU)
A;Cxos = references: EMBL:AC004411; NID:g3522932; PID:g3522935
A;Experimental source: cultivar Columbia
R;Experimental source: cultivar Columbia
N;Experimental source: cultivar Columbia
R;Experimental source: cultivar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              probable short-chain alcohol-dehydrogenase (EC 1.1.1.-) - tomato (fragment)
probable short-chain alcohol-dehydrogenase (EC 1.1.1.-) - tomato (fragment)
C;Species: Lycoperston esculentum (tomato)
C;Accession: T06364
E;Jacobsen, S.E.; Olszewski, N.E.
Planta 198, 78-86, 1996
A;Title: Gibberellins regulate the abundance of RNAs with sequence similarity to protein
A;Recession: T06364
A;Recession: T06364
A;Accession: T06364
A;Restus: preliminary; translated from GB/EMBL/DDBJ
A;Restus: preliminary; translated from GB/EMBL/DDBJ
A;Residues: 1-251 cJAC-
A;Cression: T06364
A;Residues: 1-252 cJAC-
A;Cression: T06364
A;Residues: 1-251 cJAC-
A;Cression: T06364
A;C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            THEKEVENAVKFTVEKYGKLDVLFSNAGVME--QPGSFLDLNLEQFDRTMAVNVRGAAAF 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           129 MKHAARVMI-PARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRV 187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       188 NCLSPFGLPTALGKKFSGIKWEEEFENVINFA---GNLKGPKFNVEDVANAALYLASDEA 244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               70 TNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRP-RIIDNEKADFERVLSVNVTGVFLC 128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 12 EGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTYIHCDVTN 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   10 RLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTYIHCDV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match

40.7%; Score 567; DB 2; Length 257;
Best Local Similarity 45.4%; Pred. No. 1.3e-37;
Matches 118; Conservative 49; Mismatches 81; Indels 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            tch 40.1%; Score 559; DB 2; Length 251; al Similarity 47.5%; Pred. No. 5.6e-37; 122; Conservative 46; Mismatches 81; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      245 KYVSGHNLFIDGGFSVCNSV 264
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       238 AYVSGQNLAVDGGYSVVKPI 257
```

g

ò

a ò q

g

ò

ò

Thu

S

```
C;Species: Pseudomonas aeruginosa
C;Date: 15-Sep-2000 #sequence_revision 15-Sep-2000 #text_change 31-Dec-2000
C;Date: 15-Sep-2000 #sequence_revision 15-Sep-2000 #text_change 31-Dec-2000
C;Date: 15-Sep-2000 #sequence_revision 15-Sep-2000 #text_change 31-Dec-2000
R;Stover, CK.; Pham, X.Q.; Erwin, A.L.; Mizoguchi, S.D.; Warrener, P.; Hickey, M.J.; Bradman, S.; Yuan, Y.; Brody, L.L.; Coulter, S.N.; Folger, K.R.; Kas, A.; Larbig, K.; Lim, I., Lory, S.; Olson, M.V.
Nature 406, 959-964, 2000
A;Title: Complete genome sequence of Pseudomonas aeruginosa PA01, an opportunistic pathor A;Reference number: A82950; MUID:20437337; PMID:10984043
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A;Residues: 1-253 <STO>
A;Cross-references: GB:AE004592; GB:AE004091; NID:g9947609; PIDN:AAG0503B.1; GSPDB:GN001
A;Experimental source: strain PA01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A;Gene: PA1649
C;Superfamily: ribitol dehydrogenase; short-chain alcohol dehydrogenase homology
                                                                                                                                                                                                                                                                                                                                                                                   VINEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFLC 128
                                                                                                                                                                      129 MKHAARVMIP-ARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRV 187
                                                                                                                                                                                                                                                                             RVNCLSPFGLPTALGKK-FSGIKNEEEFENVINFAGNLKGPKFNVEDVANAALYLASDEA 244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               probable short-chain dehydrogenase PA1649 [imported] - Pseudomonas aeruginosa
                                 RRIEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTYIHCD 68
                                                                                                                                                                                                                                                                                                                                                     NCLSPFGLPT - - - - - ALGKKFSGIK • NEEEFENVINFAGN - LKGPKFNVEDVANAALYLA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2 SKLLSGQVALVTGGAAGIGRATALAFAAAGVKVVVADLDSAGGEGTVEAIRQAGGEALFI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8 ARRIEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAI--GTSNSTYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             HCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FLCMKHAARVMI PARSGNI I STASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  C70885
probable dehydrogenase - Mycobacterium tuberculosis (strain H37RV)
C;Species: Mycobacterium tuberculosis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       31.0%; Score 432; DB 2;
Local Similarity 37.5%; Pred. No. 6.7e-27;
tes 95; Conservative 52; Mismatches 98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | |: :::|||| :|||::
SQESSGFITGHNLVVDGGYTSATSTMR 268
                                                                                                                                                                                                                                                                                                                                                                                                                                                              241 SDEAK-YVSGHNLFIDGGFSVCNSVIK 266
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         237 GFTTGIALPVDGG 249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       KYVSGHNLFIDGG 257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Accession: F83440
A; Status: preliminary
A; Molecule type: DNA
                                 δ
                                                                                                                                        69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         C;Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 14
                                                                     ద
                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                     ò
                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           а
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                     õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 12
alcohol dehydrogenase (ATA1) - Arabidopsis thaliana
alcohol dehydrogenase (ATA1) - Arabidopsis thaliana
N;Alternate names: protein F18P9.120
C;Species: Arabidopsis thaliana (mouse-ear cress)
C;Species: 20-Apr-2000 #sequence_revision 20-Apr-2000 #text_change 19-May-2000
C;Accession: T47354
R;Nyakatura, G.; Fartmann, B.; Dauner, D.; Sterr, W.; Holland, R.; Weichselgartner, M.;
Mayer, K.F.X.
submitted to the Protein Sequence Database, April 2000
                                                                                                                                                                                                                           Short chain alcohol dehydrogenase homolog - common tobacco
NyAlternate names: TFHP-1 protein
Cispecieses: Nicototiana tabacum (common tobacco)
Cispecieses: Nicototiana tabacum (common tobacco)
Cispecieses: Nicototiana tabacum (common tobacco)
Cispeciesesion: T03734
Rikawaoka, A.; Kawamcto, T.; Sekine, M.; Yoshida, K.; Takano, M.; Shinmyo, A.
Rikawaoka, A.; Kawamcto, T.; Sekine, M.; Yoshida, K.; Takano, M.; Shinmyo, A.
A;Title: A cis-acting element and a trans-acting factor involved in the wound-induced A;Reference number: Z15039; MUID:95004656; PMID:7920706
A;Reference number: Z15039; MUID:95004656; PMID:7920706
A;Reference number: Z15039; MUID:95004656; PMID:7920706
A;Reference mumber: Z15039; MUID:95004656; PMID:7920706
A;Residues: 1-234 cKAMA
A;Residues: 1-234 cKAMA
A;Residues: 1-234 cKAMA
A;Residues: 1-234 cKAMA
A;Cross-references: EMBL:029976; NID:9531269
A;Experimental source: strain cv. Petite Havana SR-1
C;Superfamily: ribitol dehydrogenase; short-chain alcohol dehydrogenase homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A;Introns: 132/1
A;Note: F18P9.120
C;Superfamily: ribitol dehydrogenase; short-chain alcohol dehydrogenase homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            э;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       <u>'</u>
GVAPYAVATPMTSHDEVTG----KQLEDYFDAKGILKGMVLKASHVAQVALFLASDDSAY 238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TYIHCDVINEDGVKNAVDNIVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNV 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    125 VGAFFCAKHAARVMIPFKKRFHYLHSKLLSRT-----HILHQKGAVLGFSKNIGVELG 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            123 TGVFLCMKHAARVMIPARSG-NIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELG 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          3 LRTAFARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    182 QFGIRVNCLSPFGLPTALGKKFSGIKNEEFFENVINFAGNLKGPKFNVEDVANAAL 237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DB 2; Length 234;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
35.2%; Score 490.5; DB 2; Length 272;
Best Local Similarity 44.6%; Pred. No. 1.7e-31;
Matches 119; Conservative 46; Mismatches 89; Indels 13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match 35.9%; Score 499.5; DB 2; Length 2 Best Local Similarity 47.5%; Pred. No. 2.7e-32; Matches 112; Conservative 33; Mismatches 82; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A;Cross-references: EMBL:AL138654
A;Experimental source: cultivar Columbia; BAC clone F18P9
                                                 247 VSGHNLFIDGGFSV 260
                                                                                :[| || :|||::|
239 ISGQNLAVDGGYTV 252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Reference number: Z24458
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Residues: 1-272 <NYA>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A, Accession: T47354
A, Status: preliminary
A, Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Map position: 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    178
183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ø
g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         В
                                                    ð
                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
```

ò

ò

ò

125

61

185

(strain PAC

65 IHCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGIS--DPNRPRIIDNEKA---DFERVLS 119

VNVTGVFLCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVE 179

120

```
g
                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                    qq
                                                                                                                                                     ŏ
                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 15
Alodof
probable dehydrogenase YPO3351 [imported] - Yersinia pestis (strain CO92)
C;Species: Yersinia pestis
C;Species: Versinia pestis
C;Accession: Alodof
C;Accession: Alodof
R;Parkhill, J.; Wren, B.W.; Thomson, N.R.; Titball, R.W.; Holden, M.T.G.; Prentice, M.B.
deno-Tarraga, A.M.; Cillingworth, T.; Cronin, A.; Davies, R.M.; Davis, P.; Dougan, G.;
il, M.; Rutherford, K.; Simmonds, M.; Skelton, J.; Stevens, K.; Whitehead, S.; Barrell,
Nature 413, 523-527, 2001
A;Title: Genome sequence of Yersinia pestis, the causative agent of plague.
A;Reference number: AB0001; MUID:21470413; PMID:11586360
A;Accession: Alodof
A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-256 ckURA
A;Residues: 1-256 ckURA
A;Residues: 1-256 ckURA
A;Gene: YPO3351
C;Superfamily: ribitol dehydrogenase; short-chain alcohol dehydrogenase homology
C;Date: 17-Jul-1998 #sequence_revision 17-Jul-1998 #text_change 20-Jun-2000
C;Accession: C70885
R;Collor, S.T.; Brosch, R.; Parkhill, J.; Garnier, T.; Churcher, C.; Harris, D.; Gordon, S.; Connor, R.; Davies, R.; Deviln, K.; Feltwell, T.; Gentles, S.; Hamlin, N.; Holroyd, S. Rajandream, M.A.; Rogers, J.; Rutter, S.; Seeger, K.; Skelton, S.; Squares, S. Nature 393, 537-544, 1998
A;Authors: Sqares, R.; Sulston, J.E.; Taylor, K.; Whitehead, S.; Barrell, B.G.
A;Titele Deciphering the biology of Mycobacterium tuberculosis from the complete genome A;Reference number: A70500, MUID: 9825587; PMID:9634230
A;Actersion: C70885
A;Status: prellminary; nucleic acid sequence not shown; translation not shown A;Residues: 1-258 «COLL»
A;Across-references: GB:AL008883; GB:AL123456; NID:93261490; PIDN:CAA15519.1; PID:9261280
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Geme: Rv2857c
C;Superfamily; ribitol dehydrogenase; short-chain alcohol dehydrogenase homology
F;11-188/Domain: short-chain alcohol dehydrogenase homology <5ADH>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | : | |: | |: | |: | | | : | | | CCRAALRHWULAGKGSIVNTASFVAVMGSATSQISYTASKGGVLAMSRELGVQFARQGIR 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DVINEDGVKNAVDNIVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVIGVFL 127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CMKHAARVMIPARSGNIISTASLSSTMGGGSSH-AYCGSKHAVLALTRNLAVELGQFGIR 186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VNCLSPFGLPTALGKKFSGIKNEEFFENVINF-AGNLKGPKFNVEDVANAALYLASDEAK 245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8 ARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTYIHC 67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SQRLAGRVAVITGGGSGIGLAAGRRMRAEGATIVVGDVDVEAGGAAADEL---SGLFVPT 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match

28.9%; Score 402.5; DB 2; Length 258;
Best Local Similarity 35.8%; Pred. No. 1.5e-24;
Matches 91; Conservative 49; Mismatches 105; Indels 9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FITASTFLVDGGIS 251
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                YVSGHNLFIDGGFS 259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                C;Genetics
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Db
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           6 6 6 6 6
```

ð

Query Match
28.6%; Score 398; DB 2; Length 256;
Best Local Similarity 37.4%; Pred. No. 3.4e-24;
Matches 99; Conservative 51; Mismatches 87; Indels 28; Gaps

```
Search completed: October 23, 2003, 12:51:25
Job time : 42 secs
```

```
GenCore version 5.1.6
(c) 1993 - 2003 Compugen Ltd.
```

- protein search, using sw model OM protein October 23, 2003, 12:38:34; Search time 23 Seconds (without alignments) 558.187 Million cell updates/sec Run on:

US-09-673-918A-2 score:

1393 1 MQLRTAFARRLEGKVALITG......IDGGFSVCNSVIKVFQYPDS 273 Perfect sc Sequence:

BLOSUM62 Gapop 10.0 , Gapext 0.5 Scoring table:

127863 seqs, 47026705 residues Searched:

Total number of hits satisfying chosen parameters:

seq length: 0 seq length: 200000000 Minimum DB 8 Maximum DB 8

Post-processing: Minimum Match 0% Maximum Match 100% Listing first 45 summaries

SwissProt_41:* Database :

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

COTTON

		d			SUMMARIES	
Result		Query				
No.	Score	- 1	Length	DB	ΔI	Description
-	588.5	42	336	-	TS2 MAIZE	PS0160 zea mays (m
7	406	29.1	250	۲	LING PSEPA	pseu
ო	396	28.4	255	-	YWFD BACSU	
4	381.5	~		7	Y019 THEMA	Q56318 thermotoga
ល	376	~		Н	LINX PSEPA	
φ	366	v		٦	YK02 MYCTU	
7	363	v		7	FABG THEMA	-
80	357	Ŋ		Н	FABG CHLPN	
Ø	346	4		7	Y325 THEMA	thermotoga
10	345.5	4,		-	YGCW_ECOLI	
11	343.5	4		Н	LVR LEIAQ	
12	341.5	4		7	DHG_BACSU	
13	334	24.0		٦	Y4MP RHISN	P55575 rhizobium B
14	332.5	n		-	FABG CHLMU	
15	332	3		Н	UCPA_SALTY	
16	329.5	3		٦	LIMC_RHOER	
17	328.5	n		Н	DHSO_RHOSH	
18	326.5	m	247	Н	FABG_CHLTR	
19	320.5	ы	244	Н	FABG_VIBCH	
20	320.5	3	262		YXBG_BACSU	
21	320	3	255	Н	2BHD_STREX	
22	316.5	N	244	Н	FABG_ECOLI	P25716 escherichia
23	315.5	22.6	261	Н	DHG BACME	
24	315	$^{\circ}$	270	+1	DHMA FLAS1	P22441 flavobacter
25	314.5	$^{\circ}$	261	-	DHG1_BACME	P39482 bacillus me
26	313.5	N	241	Н	FABG_RICPR	P50941 rickettsia
27	310	N	263	Н	UCPA_ECO57	
28	310	N	263	Н	UCPA_ECOLI	
29	0	N	261	Н	DHGA_BACME	m
30	308.5	N	244	Н	FABG_SALTY	_
31	308.5	22.1	261	7	1 1	m
32		22.1	261	-		_
33	307.5	22.1	244	щ	FABG_VIBHA	5533

P39484 bacillus me P39485 bacillus me P51811 bacillus su Q51576 pseudomonas P25529 escherichia P42317 bacillus su Q00791 emericella P07914 eubacterium P07974 synechocyst P19337 eubacterium P50199 gluconobact	
DHG3_BACME DHG4_BACME FABG_BACSU FADG_PCSU YV06_PSEAE HDHA_ECOLI XXJF_BACSU STCU_EMENI BA71_EUBSP DHGB_BACME FAG1_SYNY3 BA72_EUBSP GNO_GLUOX	
нинининини	
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	
222 222 222 221 221 221 221 221 221 221	
306.5 305.5 305.5 305.3 303 302 301 295.5 295.5	
₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩	

ALIGNMENTS

```
This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its was by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to licensee@ibs-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               5 TAFARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTY 64
                                                                                                                                                                                                                                                                                                                                                                                        cent 4::>,''\ell'aliable.'
-i- FUNCTION: REQUIRED FOR STAGE-SPECIFIC FLORAL ORGAN ABORTION.
-i- SIMILARITY: Belongs to the short-chain dehydrogenases/reductases
                                                                                                                                           Zea mays (Maize).
Sukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; Liliopsida; Poales; Poaceae;
PACCAD clade; Panicoideae; Andropogoneae; Zea.
                                                                                                                                                                                                                                                                                       MEDLINE=93364991; PubMed=8358795; Jebong A., Caldenor A., Calderon-Urrea A., Dellaporta S.L.; Medermination gene TASSELSEED2 of maize encodes a short-chain alcohol dehydrogenase required for stage-specific floral organ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      42.2%; Score 588.5; DB 1; Length 336;
42.2%; Pred. No. 1.5e-39;
tive 50; Mismatches 88; Indels 29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Malzebb; 56964; .
InterPro; 500108, 300219.
Pfan; PF00106; adh short; 1.
PRINTS; PR00080; SDRFAMILY.
PROSTTB; PS00061; ADH SHORT; 1.
Oxidoreductase; Developmental protein.
NP BIND
ACT_SITE 207 207 BY SIMILARITY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     4E273D6152B0BB99 CRC64;
                                                    01-OCT-1996 (Rel. 34, Created)
01-OCT-1996 (Rel. 34, Last sequence update)
01-OCT-1996 (Rel. 34, Last annotation update)
Sex determination protein tasselseed 2.
                    336 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       336 AA; 35204 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EMBL; L20621; AAC37345.1; -. PIR; A47542; A47542.
HSSP; P19992; 1HDC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Best Local Similarity 42.2
Matches 122; Conservative
                    STANDARD;
                                                                                                                                                                                                                                                                                                                                                                abortion.";
Cell 74:757-768(1993)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                                                                                                                      SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                     (SDR) family.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MaizeDB; 56963;
                TS2 MAIZE
P50160;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACT SITE
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NP BIND
ACT PT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
TS2 MAIZE
ID TS2 M
                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
```

47 TPMPKRLDGKVAIVTGGARGIGEAIVRLFAKHGARVVIADIDDAAGEALASALGPQVS-F 105

NEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFLCMK 130 63 QEEDVKALVAQTLAAFGGLDGSFNNAAIPQAGLP-LAEVSLERFRQSMDINVTGTFLCMK 121 131 HAARVMIP-ARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRVNC 189 LSPFGLPTALGKKFSGIKNE---EEFENVINFAGNLKGPKFNVEDVANAALYLASDEAKY 246

190

```
8
                                                                                                  qq
                                                                                                                                           à
                                                                                                                                                                             d
                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                    qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the BYBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                      180
                                                                                                         225
IHCDVINEDGVKNAVDNTVSTY-GKLDIMFSNAGI---SDPNRPRIIDNEKADFERVLSV 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STRAIN=UT26;
MEDINE=925977; PubMed=7515041;
MEDINE=925977; PubMed=7515041;
Magata Y., Ohtomo R., Miyauchi K., Fukuda M., Yano K., Takagi M.;
"Cloning and sequencing of a 2,5-dichloro-2,5-cyclohexadiene-1,4-diol
dehydrogenase gene involved in the degradation of gamma-
hexachlorocyclohexane in Pseudomonas paucimobilis.";
J. Bacteriol, 176:317-3125(1994).
I. PubCTION: DEGRADATION OF 2,5-DICHLORO-2,5-CYCLOHEXADIENE-1,4-DIOL
(2,5-DDOL) INTO 2,5-DICHLOROCYCHONEXADIENE-1,4-DIOL
(3,5-DDOL) INTO 2,5-DICHLOROCYCHONEXADIENE-1,4-DIOL
STMILARITY: Gamma-hexachlorocyclohexane degradation; third step.
(SDR) family.
                     -----LGKKFSGIKNEEFFENVI
                                                                                                                                                                                 226 RAHGVRVNCVSPFGVATPMLINAWROGHDDATADADRDLDLDLDLDVTVPSDQEVEKMEEVV
                                                                        121 NVTGVFLCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
29.1%; Score 406; DB 1; Length 250;
Best Local Similarity 37.9%; Pred. No. 3.2e-25;
Matches 96; Conservative 42; Mismatches 103; Indels 12; Gaps
                                                                                                                                                                                                                                                                                                                                                                                     01-0CT-1996 (Rel. 34, Created)
1-0CT-1996 (Rel. 34, Last sequence update)
01-0CT-1996 (Rel. 34, Last annotation update)
2,5-dichloro-2,5-cyclohexadiene-1,4-diol dehydrogenase (EC 1.1.-.-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pseudomonas paucimobilis (Sphingomonas paucimobilis).
Bacteria, Proteobacteria, Alphaproteobacteria, Sphingomonadales;
Sphingomonadaceae; Sphingomonas.
NCBI_TaxID=13689;
                                                                                                                                                                                                                                              286 RGLATLKGPTLRPRDIAEAVLFLASDEARYISGHNLVVDGGVTTSRNLI 334
                                                                                                                                                                                                                        217 NFAGNLKGPKFNVEDVANAALYLASDEAKYVSGHNLFIDGGFSVCNSVI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 HESP; P19992; 1HDC.
InterPro; IPR002198; ADH short.
Prim: PP00106; adh short; 1.
PRINTS; PR00080; SDRFAMILY.
PROSITE; PS00061; ADH SHORY.
PROMELIC hydrocarbons catabolism; Oxidoreductase; NAD.
NP_BIND
1.4 154 BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                       250 AA.
                                                                                                                                                 181 GOFGIRVNCLSPFGLPTA-----
                                                                                                                                                                                                                                                                                                                                                    PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EMBL; D14595; BAA03444.1; -. HSSP; P19992; 1HDC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                5-DDOL dehydrogenase).
                                                                                                                                                                                                                                                                                                                                                       STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                    LINC PSEPA
                                                                                                                                                                                                                                                                                                                ò
                                                                                                    Dp
                                                                                                                                             ò
                                                                                                                                                                                                                    ò
```

11 LEGKVALITGGASGIGETTAKLFSQHGAKVALADVQDELGHSVVEAIGTSNSTYIHCDVT 70

g

```
Runst Fe. Ogasawara N. Moszer I., Albertini A.M., Alloni G.,
Azevedo V., Bertero M.G., Bessieres P., Bolotin A., Borchert S.,
Azevedo V., Bertero M.G., Bessieres P., Bolotin A., Borchert S.,
Borrise R., Boursher L., Brans A., Braun M., Brighell S.C., Bron S.,
Brouillet S., Bruschi C.V., Colmerlu I.P., Cummings N.J., Daniel R.A.,
A. Codani J.J., Connerton I.P., Cummings N.J., Daniel R.A.,
Benian K.D., Errington J., Fabret C., Ferrari E., Foulger D.,
A. Fritz C., Fujita M., Fujita Y., Fuma S., Galizzi A., Galleron N.,
A. Hibert H., Holsappel S., Hosono S., Hullo M.F., Itaya M., Jones L.,
A. Ghim S.Y., Glaser P., Goffeau A., Golightly E.J., Grandi G.,
A. Guy B.J., Karamata D., Karshara Y., Klaerr-Blanchard M., Jones L.,
A. Milbert H., Karamata D., Karshara Y., Klaerr-Blanchard M., Jones L.,
A. Lorins B., Karamata V., Koningstein G., Krogh S., Kumno M.,
A. Kurita K., Lapidus A., Lardinois S., Lauber J., Lazarevic V.,
A. Medina N., Mellado R.P., Mizuno M., Moestl D., Nedigue C.,
A. Moone D., O'Reilly M., Ogawa K., Ogiwara A., Oudega B., Park S.H.,
A. Persecan E., Pujic P., Purnelle B., Rapoport G., Rey M., Sednia E.,
A. Scanlan E., Schowska A., Seroce Er R., Schfeuer F., Tarkamaru K.,
A. Sekguchi J., Sekowska A., Seroce Er R., Schroeter R., S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STRAIN=188,

STRAIN=188,

SERAIN=189,

BEDILINES-58020537, PubMed=7934828,

Glaser P., Kunst F., Arnaud M., Coudart M.P., Gonzales W.,

Hullo M.F., Ionescu M., Lubochinsky B., Marcelino L., Moszer I.,

Hullo M.F., Lanceran M., Schneider E., Schweizer J., Vertes A.,

Rapoport G., Danchin A.,

Rapoport G., Danchin A.,

Rapoport G., Danchin A.,

Rapoport G., Danchin A.,

Rapoport G., Sanchin Second Project: cloning and sequencing of the 97 wol. Wicrobiol. 10:371-384 (1993).
                                                                                                                                                                                                                                                                                                                                                                                                                       Bacteria; Firmīcutes; Bacillales; Bacillaceae; Bacillus.
NCBL_TaxID=1423;
                                                                                                                                                                    01-FEB-1995 (Rel. 31, Created)
01-FEB-1995 (Rel. 31, Last sequence update)
01-FEB-2003 (Rel. 41, Last annotation update)
Hypothetical oxidoreductase ywfD (EC 1.-.-)
                                                                                       255 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STRAIN=168;
MEDLINE=98044033; PubMed=9384377;
                                                                                            STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE FROM N.A. STRAIN=168;
                                                                                                                                                                                                                                                                                                                                                    YWFD OR IPA-82D.
Bacillus subtilis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A.
                                                                                                                           P39640;
RESULT 3

WED_MACSU
DACSU
DACS
```

m

```
[2]
SEQUENCE FROM
STRAIN=MSB8 /
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           91;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PSEPA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACT SITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LINX PSE
P50198;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LINX_PSEPA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 5
        ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                    This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation-the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              71 NEDGVKNAVDNTVSTYGKLDIMFSNAGIS--DPNRPRIIDNEKADFERVLSVNVTGVFLC 128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         129 MKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRVN 188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ||| :|: || ||||: || |||| || SKHALKHMLAAGKGNIJINTCSVGGLVAWPDIPAYNASKGGVLQLTKSMAVDYAKHQIRVN 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CLSPFGLPTALGKKFSGIKNEEEFENV----INFAGNLKGPKFNVEDVANAALYLASD 242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      11 LEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTYIHCDVT
Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.
STRAIN=MSB8 / DSM 3109;
MEDLINE=96125254; PubMed=8550425;
Kletzin A., Adams M.;
"Molecular and phylogenetic characterization of pyruvate and 2-
ketoisovalerate ferredoxin oxidoreductases from Pyrococcus furiosus
and pyruvate ferredoxin oxidoreductase from Thermotoga maritima.";
J. Bacteriol. 178:248-257 (1996).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Thermotoga maritima.
Bacteria; Thermotogae; Thermotogales; Thermotogaceae; Thermotoga.
NCBI_TaxID=2336;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 255;
                                                                                                                                                                                                                                                                                                                                                                                                                                 PROSITE; PS00061; ADH SHORT; 1.

Hypothetical protein; Oxidoreductase; Complete proteome.

NP BIND 13 33 NAD OR NADP (BY SIMILARITY).

ACT SITE 154 154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           28.4%; Score 396; DB 1; Length 25
36.6%; Pred. No. 2e-24;
ive 48; Mismatches 99; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   20AA2259BFB88C9B CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        01-NOV-1997 (Rel. 35, Created)
30-MAY-2000 (Rel. 39, Last sequence update)
30-CTT-2010 (Rel. 40, Least annotation update)
Putative oxidoreductase TM0019 (EC 1.-.-.)
                                                                                                                                                                                                                                                                                              EMBL; Z99123; CAB15799.1; -. PIR; S39737; S39737. HSSP; P50162; 1AE1. Subtilist; BG10628; ywfD. InterPro; IPR002198; ADH short. Pfam; PF00106; adh_short; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EAKYVSGHNLFIDGGFS 259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             237 LSSYMTGSAITADGGYT 253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             154 154 1
255 AA; 27324 MW;
                                                                                                                                                                                                                                                                          EMBL; X73124; CAA51638.1; -. EMBL; Z99123; CAB15799.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                        PRINTS; PR00080; SDRFAMILY PROSITE; PS00061; ADH SHOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  94; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Y019 THEMA
Q56318;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ACT SITE
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TM0019
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 4
Y019_THEMA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   THE SET OF THE SET OF
```

```
This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          129 MKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRVN 188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           69 VTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFLC 128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              189 CLSPFGLPTALGKKFSGIKNEE--EFENVINFAGNLKGPKFNVEDVANAALYLASDE-AK 245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           68
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61
                                                                                         Nelson K.E., Clayton R.A., Gill S.R., Gwinn M.L., Dodson R.J.,
Haft D.H., Hickey E.K., Peterson J.D., Nelson W.C., Ketchum K.A.,
McDonald L., Utterback T.R., Malek J.A., Linher K.D., Garrett M.M.,
Stewart A.M., Cotton M.D., Pratt M.S., Phillips C.A., Richardson D.,
Heidelberg J., Sutton G.G., Fleischmann R.D., Eisen J.A., White O.,
Salzberg S.L., Smith H.O., Venter J.C., Fraser C.M.;
"Evidence for lateral gene transfer between Archaea and Bacteria from
genome sequence of Thermotoga maritima.";
Nature 399:323-329(1999).
--- SMILARLY: Belongs to the short-chain dehydrogenases/reductases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           11 LEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTS--NSTYIHCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2 LEGKVAVVTGGGQGIGAAIAQLFAENGMKVVIAEIDEEAGVEREEMLRERGLDVTFVKTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             01-0CT-1996 (Rel. 34, Created)
01-0CT-1996 (Rel. 34, Last sequence update)
01-0CT-1996 (Rel. 34, Last annotation update)
2.5-dichloro-2.5-cyclohexadiene-1,4-diol dehydrogenase (EC 1.1.-.-)
(2,5-DDOL dehydrogenase).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Oxidoreductase; NADP; Complete proteome.
NADP (BY SIMILARITY).
BY SIMILARITY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             27.4%; Score 381.5; DB 1; Length 256;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                136 RGGGVII -> TRWRSDH (IN REF. 1).
28078 MW; D68160B1D7980CGB CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        66;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pred. No. 2.9e-23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        54; Mismatches
SEQUENCE FROM N.A.
STRAIN=MSB8 / DSM 3109;
MEDLINE=99287316; PubMed=10360571;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              InterPro; IPR002198; ADH short.
Pfam; PF00106; adh short; 1.
PRINTS; PR00080; SDRFAMILY.
PROSITE; PS00061; ADH SHORT; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             246 YVSGHNLFIDGGFSV 260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FITGTNFIVDGGMTV 250
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EMBL; AE001690; AAD35113.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       35.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EMBL; X85171; CAA59459.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 33
153
136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Hypothetical protein;
NP BIND 9 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PIR; E72427; E72427.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              256 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      HSSP; 070351; 1E6W.
TIGR; TM0019; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                    (SDR) family.
```

RV2002 OR MT2058 OR MTCY39.16C

```
Best Loca
Matches
à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Dp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                        This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           185 IRVNCLSPFGL-----PTALGKKFSGIKNEEEFENVINFAGNLKGPKFNVEDVANA 235
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     179 VRVNTIVPGGMNTPITANVPPDVLKQQTSQIP------MGKLGDP----IDIANG 223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      66 HCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKAD-FERVLSVNVTG 124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     125 VFLCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFG 184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61
                                                                                                                                                  8 ARRLEGKVALITGGASGIGETTAKLFSOHGAKVALADVQDELGHSVVEAIGTS--NSTYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PATHWAY: Degradation of gamma-hexachlorocyclohexane. SIMILARITY: Belongs to the short-chain dehydrogenases/reductases
                  Pseudomonas paucimobilis (Sphingomonas paucimobilis).
Bacteria; Proteobacteria; Alphaproteobacteria; Sphingomonadales;
Sphingomonadaceae; Sphingomonas.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       90; Indels 30;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EMBL; D23722; BMAN, LASP; P19992; 1HDC.
HSSP; P19992; 1HDC.
INCEPERO; IPRO02198; ADH_Short.

R FEAN; PF000166; adh short; 1.
R PRINTS; PR00080; SDRFAMILY.
R PRINTS; PR00080; ADH_SHORT; 1.
R PR00080; ADH_SHORT; 1.
R
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            27.0%; Score 376; DB 1; Length 250;
llarity 36.2%; Pred. No. 7.6e-23;
Conservative 49; Mismatches 90; Indels 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      YKO2 MYCTU

TO Q10855,

DT 01-0CT-1996 (Rel. 34, Created)

T 15-VUL-1999 (Rel. 38, Last sequence update)

DT 15-SEP-2003 (Rel. 42, Last annocation update)

DE Putative oxidoreductase Rv2002 (EC 1.-.-.).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            236 ALYLASDEAKYVSGHNLFIDGGFSV 260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Local Similarity
les 96; Conserv
                                                                                                                   SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                        (SDR) family.
                                                                              NCBI_TaxID=13689
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Best Loc
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Op
a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
```

```
This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the FNBL outstation the Buropean Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@18b-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               70 TNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFLCM 129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    130 KHAARVMIPARSGNIISTASLSSTWGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRVNC 189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
STRAIN=CDC 1551 / Oshkosh;
STRAIN=CDC 1551 / Oshkosh;
Fleistchmann R.D., Alland D., Eisen J.A., Carpenter L., White O.,
Peterson J., DeBoy R., Dodson R., Gwinn M.L., Haft D., Hickey E.,
Rolonay J.F., Nolson W.C., Umayam L.A., Ermolaeva M.D., Salzberg S.L.,
Delcher A., Utterback T., Weidman J., Khouri H., Gill J., Mikula A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    10 RLEGKVALITGGASGIGETTAKLFSQHGAKVALADVQDELGHSVVEAIGTSNSTYIHCDV
                                                                                                                                                                                                                                                                                                                         .
S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE=9829597; PubMed=9634230;
MEDLINE=98295987; PubMed=9634230;
MEDLINE=98295987; ProbMed=9634230;
Gordon S. V., Brannen R., Gas S., Barry C. E. III, Tekaia F.,
Badcock K., Basham D., Brown D., Chillingworth T., Connor R.,
Badcock K., Devlin K., Feltwell T., Gentles S., Hamilin N., Holroyd S.
Hornsby T., Jagels K., Krogh A., McLean J., Moule S., Murphy L.,
Oliver S., Seeger K., Skelton S., Squares S., Squares R.,
Sulston J.E., Taylor K., Whitehead S., Barrell B.G.;
"Deciphering the biology of Mycobacterium tuberculosis from the Nature 393:537-544(1998).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Tubercuiist, Rv2002; -.
InterPro; IRR02198; Abus short.
PRINTS: PR0106; adh. short; 1.
PRINTS; PR00080; SDRFAMILY.
PROSITE; PS0061; ADH SHORT; 1.
Hypothetical protein; Oxidoreductase; NAD; Complete proteome;
Mycobacterium tuberculosis.
garcteria, Actinobacteria, Actinobacteridae, Actinomycetales;
Corynebacterinese; Mycobacteriaceae, Mycobacterium.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB 1; Length 260;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              26.3%; Score 366; DB 1; Length 26 ilarity 34.7%; Pred; No. 56-22; Conservative 42; Mismatches 87; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -> G (IN REF, 2).
0935A14ED36220B7 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NAD (BY SIMILARITY).
BY SIMILARITY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            11 35 NA
153 153 BY
174 174 S
260 AA; 27030 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EMBL, Z74025; CAA98414.1; -.
EMBL, ARG07057; AAK46335.1; -.
PIR, H70758; H70758.
PDB, INFF; 04-WAR-03.
TIGR, MT2088; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Local Similarity
les 91; Conserv
                                                                                                                                               SEQUENCE FROM N.A.
                                                                                               NCBI_TaxID=1773;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       3D-structure.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACT SITE
CONFLICT
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
```

Ŋ

```
STRAIN=AR39
                                                                                                                                                                                                                                                                                                                          CHLPN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      pneumoniae
                                                                                                      119
                                                                                                                                       187
                                                                                                                                                                                                                                                                                                            FABG_CHLPN
                                                                                                                                                                                                                                                                                           RESULT 8
                                 g
                                                                                                                                     ò
                                                                                                                                                                                                                                   g
                                                                     ð
                                                                                               ద
                                                                                                                                                                     유
                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation-the Buropean Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
RAVVKPMKEAGRGSIINISSIEGLAGTVACHGYTATKFAVRGLTKSTALELGPSGIRVNS 180
                                                    LSPFGL-------PTALGKKFSGIKNEEEFENVINFAGNLKGPKFNVEDVANA 235
                                                                                      -----EVSNL 215
                                                                                                                                                                                                                                                           30-WAY-2000 (Rel. 39, Created)
30-MAY-2000 (Rel. 39, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
3 - oxoacyl-lacyl-carrier protein] reductase (EC 1.1.1.100) (3-ketoacyl-acyl carrier protein reductase)
FABG OR TM1724.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Nelson K.E., Clayton R.A., Gill S.R., Gwinn M.L., Dodson R.J.,
Haft D.H., Hickey B.K., Peterson J.D., Nelson W.C., Ketchum K.A.,
McDonald L., Utterback T.R., Malek J.A., Linher K.D., Garrett M.M.,
Stewart A.M., Cotton M.D., Pratt M.S., Phillips C.A., Richardson D.,
Heidelberg J., Sutton G.G., Pleischmann R.D., Bisen J.A., White O.,
Salzberg S.L., Smith H.O., Venter J.C., Fraser C.M.,
"Evidence for lateral gene transfer between Archaea and Bacteria from
genome sequence of Thermotoga maritima.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CATALYTIC ACTIVITY: (3R)-3-hydroxyacyl-[acyl-carrier protein] + NADP(+) = 3-oxoacyl-[acyl-carrier protein] + NADPH.
PATHWAY: Fatty acid biosynthesis pathway, first reduction step.
SIMILARITY: Belongs to the short-chain dehydrogenases/reductases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pfam: PF00106; adh short; 1.
PRINTS; PR00080; SDRFMILY.
PROSITE; PS00061; ADH SHORT; 1.
PROSITE; PS00061; ADH SHORT; 1.
Fatty acid biosynthesis; Oxidoreductase; NADP; Complete proteome.
                                                                                                                                                                                                                                                                                                                                                                  Thermotoga maritima.
Hacteria; Thermotogae; Thermotogales; Thermotogaceae; Thermotoga.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DB 1; Length 246;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8C08904D28099142 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NADP (BY SIMILARITY)
BY SIMILARITY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8e-22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   26.1%; Score 363; DB 35.8%; Pred. No. 8e-22 tive 45; Mismatches
                                                                                                                                                                                                                                       246 AA
                                                                                   IHP-GLVKTPMTDWVPEDIFQTALGRAAEPV-
                                                                                                                    236 ALYLASDEAKYVSGHNLFIDGG 257
                                                                                                                                                 216 VVYLASDESSYSTGAEFVVDGG 237
                                                                                                                                                                                                                                       PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE=99287316; PubMed=10360571;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 InterPro; IPR002198; ADH_short.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EMBL, AE001811; AAD36790.1; -. PIR; H72219; H72219. HSSP; P50162; 1AE1. TIGR; TM1724; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    246 AA; 26401 MW;
                                                                                                                                                                                                                                       STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                         DSM 3109;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM N.A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (SDR) family
                                                                                                                                                                                                                                                                                                                                                                                                                                                          STRAIN=MSB8
                                                                                                                                                                                                                                     THEMA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACT SITE
SEQUENCE
                                                    190
                                                                                   181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACT C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
                                                                                                                                                                                                                                     FABG THE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Local
                                                                                                                                                                                                                     FABG_THEMA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Best Loc
Matches
                                                                                                                                                                                                      RESULT
                                                                              ద
                                                  ò
                                                                                                                  ò
```

10 RLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDE-LGHSVVEAIGTSNST--YIH 66

106; Indels

Conservative

91;

셤 ठ

RLEGKVCLITGAASGIGKATTLLFAQEGATVIAGDISKENLDSLVKEAEGLPGKVDPYV-

```
This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation-the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@lsb-sib.ch).
                                                                                                                  SUVIQMVVPYMIKQRNGSIVNVSSVVGIYGNPGQINYAASKAGVIGMIKTWAKELAGRNIR 178
                                                                                                                                                                                246
67 CDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVF 126
                                                                                        LCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGIR 186
                                                                                                                                                                                                                           179 VNAVAPGFIETPMTEKLPEKARETALSRIP--LGRFGKP----EEVAQVILFLASDESSY 232
                                                                                                                                                                                                                                                                                                                                                                                                                                                    0928F2, 09001;
30-MAY-2000 (Rel. 39, Created)
30-MAY-2000 (Rel. 39, Last sequence update)
16-OCT-2001 (Rel. 40, Last annotation update)
3-0x0acyl-[acyl-carrier_protein] reductase (BC 1.1.1.100) (3-ketoacyl-
                          MEDLINE=20150255; PubMed=10684935; Read T.D., Brunham R.C., Shen C., Gill.S.R., Heidelberg J.F., White O., Hickey E.K., Peterson J., Utterback T., Berry K., Bass S., Linher K., Weidman J., Khouri H., Craven B., Bowman C., Dodson R., Gwinn M., Nelson W., DeBoy R., Kolonay J., McClarty G., Salzberg S.L., Eisen J., Fraser C.M.;
                                                                                                                                                                                UNCLSPFGLPTALGKKFSG1KNEEFFENVINFAGNLKGPKFNVEDVANAALYLASDEAKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Shirai M., Hirakawa H., Kimoto M., Tabuchi M., Kishi F., Ouchi K., Shiba T., Ishii K., Hattori M., Kuhara S., Nakazawa T.; "Comparison of whole genome sequences of Chlamydia pneumoniae J138 from Japan and CWL029 from USA."; Nucleic Acids Res. 28:2311-2314 (2000).
-!- CATALYTIC ACTIVITY: (3R)-3-hydroxyacyl-[acyl-carrier protein] + NADPH.
-!- CATALYTIC ACTIVITY: (3R)-3-hydroxyacyl-[acyl-carrier protein] + NADPH.
-!- PATHWAY: Fatty acid biosynthesis pathway; first reduction step.
-!- SIMILARITY: Belongs to the short-chain dehydrogenases/reductases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Kalman S., Mitchell W., Marathe R., Lammel C., Fan J., Hyman R.W., Olinger L., Grimwood J., Davis R.W., Stephens R.S.; "Comparative genomes of Chlamydia pneumoniae and C. trachomatis."; Nat. Genet. 21:385-389 (1999).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Chlamydia pneumoniae (Chlamydophila pneumoniae).
Bacteria; Chlamydiae; Chlamydiales; Chlamydiaceae; Chlamydophila.
NCBI_TaxID=83558;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "Genome sequences of Chlamydia trachomatis MoPn and Chlamydia
                                                                                                                                                                                                                                                                                                                                                                                                                                        Ą.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Nucleic Acids Res. 28:1397-1406(2000).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STRAIN=CWL029;
MEDLINE=99206606; PubMed=10192388;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE=20330349; PubMed=10871362;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              acyl carrier protein reductase)
                                                                                                                                                                                                                                                                        VSGHNLFIDGGFSV 260
                                                                                                                                                                                                                                                                                                                 233 VTGQVIGIDGGLVI 246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FABG OR CPN0296 OR CP0462.
                                                                                                                                                                                                                                                                                                                                                                                                                                        STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (SDR) family.
```

```
ò
                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                임
                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Db
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its
                                                                                                                                                                                                                                        9
                                                                                                                                                                                                                                                                                                                                                                                       182
                                                                                                                                                                                                                                                                                                                              69 VTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFLC 128
                                                                                                                                                                                                                                                                                                                                                                129 MKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRVN 188
                                                                                                                                                                                                                                                                                                                                                                                                                                        227
                                                                                                                                                                                                                                                               68
                                                                                                                                                                                                                                                                                      64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STRAIN-ERROW N.A.
STRAIN-ENSB / DSW 3109,
MEDLINE-99287316, PubMed=10360571;
Nelson K.E., Clayton R.A., Gill S.R., Gwinn M.L., Dodson R.J.,
Hafck P.E., Peterson J.D., Nelson W.C., Ketchum K.A.,
Hafck D.H., Hickey E.K., Peterson J.D., Nelson W.C., Ketchum K.A.,
Stewart A.M., Cotton M.D., Pratt M.S., Phillips C.A., Richardson D.,
Heidelberg J., Sutton G.G., Pleischmann R.D., Eisen J.A., White O.,
Salzberg S.L., Smith H.O., Venter J.C., Fraser C.M.,
"Evidence for lateral gene transfer between Archaea and Bacteria from
genome sequence of Thermotoga maritima.",
Nature 399:323-329(1999)
--- SIMILARITY: Belongs to the short-chain dehydrogenases/reductases
                                                                                                                                                                                                                                                                                                                                                                               123 CSSVIRHMIKARSGSIINVASIVAKIGSAGQTNYAAAKAGIIAFTKSLAKEVAARNIRVN
                                                                                                                                                                                                                                                               11 LEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAI-GTSNS-TYIHCD
                                                                                                                                                                                                                                                                             5 LVGKKVIVTGGSRGIGLGIVKLFLENGADVEIWGLNEERGQAVIESLTGLGGEVSFARVD
                                                                                                                                                                                                                                                                                                                                                                                                                 CLSPFGLPTALGKKFSG1KNEEEFENVINFAGNLK------GPKFNVEDVANAALYL
                                                                                                                                                                                                                                                                                                                                                                                                                              TIGKY, COMBAS, ADH Short.

Pfam, PF00106; adh Short.

PRINTS, PR00069, SDRFAMILY.

PROSITE, PS00061, ADH SHORT; 1.

PROSITE, PS00061, ADH SHORT; 1.

RALY, acid biosynthesis; Oxidoreductase; NADP; Complete proteome.

NP BIND

ACT_SITE 156 BY SIMILARITY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Thermotoga maritima.
Bacteria; Thermotogae; Thermotogales; Thermotogaceae; Thermotoga.
                                                                                                                                                                                                                                      28;
                                                                                                                                                                                                            Query Match 25.6%; Score 357; DB 1; .jength 248; Best Local Similarity 33.5%; Pred. No. 2.4e-21; Matches 87; Conservative 53; Mismatches 92; Indels 3
                                                                                                                                                                                     01A2A758B701577E CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           30-MAY-2000 (Rel. 39, Created)
30-MAY-2000 (Rel. 39, Last sequence update)
16-0CT-2001 (Rel. 40) Last annotation update)
Hypothetical oxidoreductase TM0325 (EC 1.-..).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     251 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ASQLSSYMTAQTLVVDGGLT 247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                240 ASDEAKYVSGHNLFIDGGFS 259
                                                                                                                                                                                     26504 MW;
EMBL; AE001614; AAD18445.1; --
BMBL; AE002207; ARF38299.1; --
BMBL; AE002207; ARF38299.1; --
PIR; D72096; D72096.
PIR; H86527; H86527;
HSSP; P19992; 1HDC.
PHCI. ZDPAGE; Q928P2; --
IIGR; CP0462; Q928P2; --
IIGR; CP0462; Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     STANDARD;
                                                                                                                                                                                       248 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (SDR) family.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Bacteria; Thermo
NCBI TaxID=2336;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     THEMA
                                                                                                                                                                          ACT SITE
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                        183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          q
  DR DR DR DR KW KW KW KW SO
                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                 qq
                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
```

```
use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           64 AKD--AEQIVKKTVETFGRLDILVNNAGIVPYG--NIEETSEEDFDKTMAVNVKGPFLLS 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            190 LSPFGLPTALG--KKFSGIKNEEEFENVINFAGNLK--GPKFNVEDVANAALYLASDEAK 245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             70 TNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFLCM 129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            12 EGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGT--SNSTYIHCDV 69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          130 KHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRVNC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STRAIN=KI2;
BEDLINE-27349980; PubMed-9205837;
Yamamnco Y., Alba H., Baba T., Hayashi K., Inada T., Isono K.,
Yamamoco Y., Alba H., Baba T., Hayashi K., Miki T., Mitshhashi N.,
Itoh T., Kimura S., Kitagawa M., Makimo K., Miki T., Mitshhashi N.,
Mizobuchi K., Mori H., Nakade S., Nakamura Y., Nashimoto H.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE FROM N.A.
SEQUENCE FROM N.A.
STRAIN*IX / Mailess;
MEDLINE=97426617; PubMed=9278503;
Blattner F.R., Plunkett G. III, Bloch C.A., Perna N.T., Burland V.,
Blattner F.R., Plunkett G. III, Bloch C.A., Rode C.K., Mayhew G.F.,
Gregor J., Davis N.W., Kirkpatrick H.A., Goeden M.A., Rose D.J.,
Mau B., Shao Y.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Toch of the coli.
Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
Enterobacteriaceae; Escherichia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Match 24.8%; Score 346; DB 1; Length 251; Local Similarity 36.9%; Pred. No. 1.8e-20; Loservative 45; Mismatches 100; Indels 14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   "The complete genome sequence of Escherichia coli K-12."; Science 277:1453-1474(1997).
                                                                                                                                        EMBL, AE001714; AAD35412.1; -.
PIR, G72389; G72389;
TIGR, TW0122; 1AE1.
TIGR, TW0122; PF000198; ADH_short.
InterPro; IPR002198; ADH_short.
Pfam; PF00106; Adh_short, 1.
PROSITE; PS00061; ADH_SHORT; 1.
PROSITE; PS00061; ADH_SHORT; 1.
PROSITE; PS00061; ADH_SHORT; 1.
ACT_SITE 152 152 BY SIMILARITY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61C736A0F13564A5 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              P76573; P78216; Q46913;
01-NOV-1997 (RR1 35, Created)
101-NOV-1997 (RR1 35, Last sequence update)
16-OCT-2001 (Rel. 35, Last annotation update)
Hypothetical oxidoreductase ygcW (EC 1.-.-)
YGCW OR B2774.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          261 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      26635 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE OF 1-117 FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      246 YVSGHNLFIDGG 257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          :::| : ||||
236 FMTGSIINIDGG 247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      251 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NCBI_TaxID=562;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          YGCW ECOLI
                                                                                                                                                                                                                                                                                                                                                                                                                                        ACT SITE
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Best Loca
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            YGCW ECOLI
```

```
103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        103
                                                                                                                                                                                                                                                                                                                     (actinol)
                                                                                                                                                                                                STRAIN=M-13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NP BIND
ACT "
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACT_SITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MUTAGEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Best Loc
Matches
   유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ठ
                                                                                                               This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this etatement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  129 MKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRVN 188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              69 VINEDGVKNAVDNIVSTYCKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFLC 128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CLSP--FGLPTALGKKFSGIKNEEEFENVINFAGNLKGPKFNVEDVANAALYLASDEAKY 246
                                                                                                                                                                                                                                                                                                                                                                                                                       11 LEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHS--VVEAIGTSNSTYIHCD 68
                                                                                                                                                                                                                                                                                                                                                                                                                                     the Escherichia coli
Oshima T., Oyama S., Saito N., Sampei G., Satoh Y., Sivasundaram S., Tagami H., Takahashi H., Takeda J., Takemoto K., Uehara K., Wada C., Yamagata S., Horiuchi T., "Construction of a contiguous 874-kb sequence of the Escherichia col
                                                                                -!- SIMILARITY: Belongs to the short-chain dehydrogenases/reductases
                                            -K12 genome corresponding to 50.0-68.8 min on the linkage map and analysis of its sequence features.";

DNA Res. 4:91-113(1997).
                                                                                                                                                                                                                                                                                                                                                                                                  13;
                                                                                                                                                                                                                                                                                                                                                                          24.8%; Score 345.5; DB 1; Length 261; 32.3%; Pred. No. 2.1e-20;
                                                                                                                                                                                                                                   HSSP1, LEGGE BEG13130; yggw.

RECOGENE; EG13130; yggw.

InterPro; IPR002198; ADH_short.

R Pfam; PF00106; adh short; 1.

R PRINTS; PR00080; SDRPAMILY.

JR PROSITE; PS00080; ADH SHORT; 1.

RROSITE; PS00080; ADH SHORT; 1.

RWOSTE; PS00080; ADH SHORT; 1.

RWD OR NADP (BY SIMILARITY).

166 BY SIMILARITY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Leifsonia aquatica (Corynebacterium aquaticum).
Bacteria; Actinobacteria; Actinobacteridae; Actinomycetales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               15-SEP-2003 (Rel. 42, Created)
15-SEP-2003 (Rel. 42, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
Levodione reductase (EC 1.1.1.-) ((6R)-2,2,6-trimethyl-1,4-
cyclohexanedione reductase).
                                                                                                                                                                                                                                                                                                                                                                                                 58; Mismatches 101; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Micrococcineae; Microbacteriaceae; Leifsonia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           267 AA
                                                                                                                                                                                                        EMBL; U29579; AAA69285.1; ALT_INIT.
EMBL; AE0000341; AAC75816.1; ALT_INIT.
EMBL; D90893; BAA16569.1; ALT_INIT.
HSSP; P25529; 1AHH.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VSGHNLFIDGGFSV 260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |:|| | :|||: |
247 VNGHLLVVDGGYLV 260
                                                                                                                                                                                                                                                                                                                                                                                     Similarity 32.3
82; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NCBI_TaxID=144185;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A.
                                                                                           (SDR) family.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LEIAQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            247
                                                                                                                                                                                                                                                                                                                                                                                                                                             16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               189
                                                                                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                                                                                       Best Local
 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                       ò
```

```
This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation-the Buropean Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as less content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              66 HCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEK---ADFERVLSVNV 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        70 VADVSDEAQVEAYVTATTERFGRIDGFFNNAGIEGKQNP----TESFTAAEFDKVVSINL 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TGVFLCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGO 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (actinol).
CATALYTIC ACTIVITY: (4R,6R)-4-hydroxy-2,2,6-trimethylcyclohexanone
                        Yoshisumi A., Wada M., Takagi H., Shimizu S., Nakamori S., "Cloning, sequence analysis, and expression in Escherichia coli of the gene encoding monovalent cation-activated levodione reductase from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   J. Biol. Chem. 278:19367-19395 (2003).
-!- FUNCTION: Catalyzes the regio- and stereoselective reversible NAD-dependent reduction of (6R)-2,2,6-trimethyl-1,4-cyclohexanedione (1evodione) to (4R,6R)-4-hydroxy-2,2,6-trimethylcyclohexanone
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     + NAD(+) = (6R)-2,2,6-trimethyl-1,4-cyclohexanedione + NADH.
-!-RNZYME REGULATION: Strongly activated by monovalent cations, such as K(+), Na(+), and NH4(+).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ø
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDE----LGHSVVEAIGTSNSTYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MEDLINE=22638325; PubMed=12621044; Sopratori Y., Shimizu S., Sopabe S., Yoshizumi A., Fukami T.A., Shiratori Y., Shimizu S., Takagi H., Nakamori S., Wada M.; Takagi H., Nakamori S., Wada M.; The crystal structure and stereospecificity of levodione reductase from Corynebacterium aquaticum M-13.";
                                                                                                                                                                                                                                                                                                                                  Wada M., Yoshizumi A., Nakamori S., Shimizu S.; "Purification and characterization of monovalent cation-activated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GLU-103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     stereospecificity.
E->A,D,N,Q: 26-fold increase in Km
much lower enantiomeric excess of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           24.7%; Score 343.5; DB 1; Length 267;
                                                                                                                                                                                                                                                                                                                                                                                             levodione reductase from Corynebacterium aquaticum M-13.",
Appl. Environ. Microbiol. 65:4399-4403(1999).
[3]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     X-RAY CRYSTALLOGRAPHY (1.6 ANGSTROMS), AND MUTAGENESIS OF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NAD (BY SIMILARITY).
BY SIMILARITY.
Role in the determination of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         6F05C89383500304 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            48; Mismatches 105;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         reaction products
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .1e-20
                                                                                                                                                               Biosci. Biotechnol. Biochem. 65:830-836(2001)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pred. No. 3
                                                                                                                                                                                                                                    PARTIAL SEQUENCE, AND CHARACTERIZATION
                                                                                                                                                                                                                                                                   STRAIN=M-13;
MEDLINE=99437825; PubMed=10508066;
MEDLINE=21281640; PubMed=11388460;
                                                                                                                            Corynebacterium aquaticum M-13.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             InterPro; IPR002198; ADH_short.
Pfam; PF00106; adh short; 1.
PRINTS; PR00080; SDRFAMILY.
Oxidoreductase; NAD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         27920 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EMBL; AB042262; BAA95121.1; -.
HSSP; P19992; 1HDC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             33.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       42
165
103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            267 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Local Similarity
nes 88; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (SDR) family.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
```

ω

```
REAL STRAIN=168;

RAY CHORLE FROW N.A.

RAY CAUGAILE FROM N.A.

RAY CAUGAILE FROM N. MOSSET I., Albertini A.M., Alloni G.,

RAY CHAIL S., Boursier L., Brans A., Braun M., Brigals I.S.C., Bron S.,

RAY Brouillet S., Bruschi C.V., Caldwell B., Capuano V., Carter N.M.,

RAY Codani J. J., Connerton I.F., Cummings N.J., Daniel R.A.,

ROUIS S.K., Codani J.J., Fabret C., Ferrari E., Foulger D.,

RAY Chils B.J., Hagas K., Halech J., Gallzi D.D., Emmerson P.T.,

RAY Fritz C., Fulita M., Fulita Y., Puna S., Gallzzi P., Calleron N.,

RAY Fritz C., Fulita M., Fulita Y., Puna S., Gallzzi J., Grandi G.,

RAY Fritz C., Holsappel S.J., Hascon S., Hallo M., Klain S.,

RAY Ghim S.Y., Gaser P., Goffeau A., Golightly E.J., Grandi G.,

RAY Ghim S.Y., Rashara Y., Raerr-Blanchard M., Klein C.,

RAY Golis P., Karamata D., Kasahara Y., Raerr-Blanchard M., Klein C.,

RAY Golis S., Hancon S., Hallo M., Lazarevic V.,

RAY Kurita K., Lapidus A., Lardinois S., Lauber J., Lazarevic V.,

RAY Medina N., Mellado R.P., Mizuno M., Moestl D., Nakai S., Rumon M.,

RAY Presecan E., Pulit M., Potawa A., Oudega B., Park S.H.,

RAY Presecan E., Pulit P., Purnelle B., Rapoport G., Rey M., Reynolds S.,

RAY Satto T., Scanlan E., Schleich S., Schroeter R., Scoffone F.,

RAY Scorkin A., Tacconi E., Takağı T., Takahashi H., Takemaru K.,

RAY Takeuchi M., Tamakoshi A., Taramakoshi A., Wanamoto M., Wanamoto K., Yasamoto K., Yasamoto M., Wanamoto M., Wanamoto M., Wanamoto M., Wan
                                 183 FGIRVNCLSPFGLPTALGKKF-----SGIKNEEEFENVINFAGNLKGPKFNVEDVANA 235
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEDINE 97124189; PubMed=8969502;
Yamano K., Kurita K.;
Yamano M., Kurita K.;
"The 25 degrees-36 degrees region of the Bacillus subtilis chromosome: determination of the sequence of a 146 kb segment and identification of 113 genes.";
Microbiology 142:3047-3056 (1996).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
MEDLINE=86186021; PubMed=3082854;
MEDLINE=86186021; PubMed=3082854;
Lampel K.A., Uratani B., Chaudhry G.R., Ramaley R.F., Rudikoff S.;
"Characterization of the developmentally regulated Bacillus subtilis glucoses dehydrogenase gene."
J. Bacteriol. 166:238-243(1986).
                                                                                                                                                                                                                                                                                                                                                                                                                                                         Firmicutes; Bacillales; Bacillaceae; Bacillus.
                                                                                                                                                                                                                                                                                     P12310; P94430;
01-OCT-1989 (Rel. 12, Created)
30-MAY-2000 (Rel. 39, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
Glucose 1-dehydrogenase (EC 1.1.1.47).
                                                                                                                             241 VAFLLSDDASYVNATVVPIDGGQS 264
                                                                                           236 ALYLASDEAKYVSGHNLFIDGGFS 259
                                                                                                                                                                                                                                                                  STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Nature 390:249-256(1997)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                      Bacillus subtilis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                               Bacteria; Firmicu
NCBI_TaxID=1423;
                                                                                                                                                                                                                                                                     BACSU
                                                                                                                                                                                                                                                                  g
                                                                                              à
                                                                                                                                     용
```

```
This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the Buropean Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        63 QGDVTKEEDVKNIVQTAIKEFGTLDIMINNAGLENP----VPSHEMPLKDWDKVIGTNLT 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              66 HCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEK--ADFERVLSVNVT 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  124 GVFLCMKHAARVMIPAR-SGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQ 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               11 LEGKVALITGGASGIGETTAKLFSQHGAKVAI---ADVQD--ELGHSVVEAIGTSNSTYI 65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 5 LKGKVVAITGAASGLGKAMAIRFGKEQAKVVINYYSNKODPNEVKEEVIKAGG--EAVVV 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      183 FGIRVNCLSPFGLPTAL-GKKFSGIKNEEEFENVINFAGNLKGPKFNVEDVANAALYLAS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
       lactone + NAD(D)H.
--- SUBUNIT: Homotetramer.
--- INDUCTION: IT IS INDUCED AT STAGE III OF THE SPORULATION.
--- SIMILARITY: Belongs to the short-chain dehydrogenases/reductases (SDR) family.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       01-NOV-1997 (Rel. 35, Created)
01-NOV-1997 (Rel. 35, Last sequence update)
01-NOV-1997 (Rel. 35, Last annotation update)
putative short-chain type dehydrogenase/reductase YAMP (EC 1.-.-).
CATALYTIC ACTIVITY: Beta-D-glucose + NAD(P)(+) = D-glucono-1,5-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            98; Indels 29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB 1; Length 261;
                                                                                                                                                                                                                                                                                                                                                                                             PIR; D69629; LOUGE: 1ABI:
R HSSP: PSO162; 1ABI:
R Subtilist; BG10624; gdh.
R InterPro; IPR00198; ADH_short.
R InterPro; IPR00106; adh_short; 1.
DR PRINTS; PR00106; SBREAMILY.
DR PROSITE; PS00061; ADH_SHORT; 1.
DR PROSITE; PS00061; ADH_SHORT; 1.
NADDP (BY SIMILARITY).
FT ACT SITE 158 158 BY SIMILARITY).
FT ACT SITE 158 159 BY SIMILARITY.
FT ACT SITE 158 150 BY SIMILARITY.
FT ACT 148 150 EVI -> AF (IN REF. 1).
FT ACT SITE 150 EVI -> AF (IN REF. 1).
FT ACT SITE 150 EVI -> AF (IN REF. 1).
FT ACT SITE 150 EVI -> AF (IN REF. 1).
FT ACT SITE 150 EVI -> AF (IN REF. 1).
FT ACT SITE 150 EVI -> AF (IN REF. 1).
FT ACT SITE 150 EVI -> AF (IN REF. 1).
FT ACT SITE 150 EVI -> AF (IN REF. 1).
FT ACT SITE 150 EVI -> AF (IN REF. 1).
FT ACT SITE 150 EVI -> AF (IN REF. 1).
FT ACT SITE 150 EVI -> AF (IN REF. 1).
FT ACT SITE 150 EVI -> AF (IN REF. 1).
FT ACT SITE 150 EVI -> AF (IN REF. 1).
FT ACT SITE 150 EVI -> AF (IN REF. 1).
FT ACT SITE 150 EVI -> AF (IN REF. 1).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Bacteria; Proteobacteria; Alphaproteobacteria; Rhizobiales;
Rhizobiaceae; Rhizobium/Agrobacterium group; Rhizobium.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Match
Local Similarity 34.4%; Pred. No. 4.4e-20;
es 93; Conservative 50; Mismatches 98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      253 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              242 DEAKYVSGHNLFIDGGFSVCNSVIKVFQYP 271
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    234 KEASYVIGITLFADGGMT------QYP 254
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     [1]
SEQUENCE FROM N.A.
MEDLINE=97305956; PubMed=9163424;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (strain NGR234).
                                                                                                                                                                                                                                                                                                                              EMBL, M12276; AAA22463.1; -. EMBL, D50453; BAA09024.1; -. EMBL, Z99106; CAB12201.1; -. PIK, D69629; D69629.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Plasmid sym pNGR234a.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NCBI_TaxID=394;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Rhizobium sp.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches
       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Dp
```

```
Query Match
Best Local Similarity
Local 85; Conserva
                                                                                                                                                                                                                                  HSSP; P50163; 2AE1.
TIGR; TC0508; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              UCPA SALTY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         68
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation-the Buropean Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@lsb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                      FLCMKHAARVMIPAR----SGNIISTASLSSTMGGG--SSHAYCGSKHAVLALTRNLAVE 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                121 L----NLSQVFIPNMRQNGGGSIACMSSVSAQRGGGIFGGPHYSAAKAGVLGLAKAMARE 176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       180 LGQFGIRVNCLSPFGLPTAL-GKKFSGIKNEEFFENV-INFAGNLKGPKFNVEDVANAAL 237
                                                                                                                                                                                                                                                                                                                                                                       LEGKVALITGGAS --GIGETTAKLFSQHGAKVAIADVQ-DELGHSVVEAIGTSNSTYI-- 65
                                                                                                                                                                                                                                                                                                                                                                                      16-OCT-2001 (Rel. 40, Created)
16-OCT-2001 (Rel. 40, Last sequence update)
16-OCT-2001 (Rel. 40, Last sequence update)
16-OCT-2001 (Rel. 40, Last annotation update)
3-oxoacyl-lacyl-carrier protein] reductase (EC 1.1.1.100) (3-ketoacyl-acyl carrier protein reductase).
FABG OR TCGS08.
Chlamydia muridarum.
Bacteria; Chlamydiae; Chlamydiales; Chlamydiaceae; Chlamydia.
                                                                                                                                                                                                                                                                                                                                                                                                                        HCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEDLINE-20150255; PubMed-10684935; Read T.D., Brunham R.C., Shen C., Gill S.R., Heidelberg J.F., White O., Hickey E.K., Peterson J., Utterback T., Berry K., Bass S., Linher K., Weidman J., Khouri H., Craven B., Bowman C., Dodson R., Gwinn M., Nelson W., DeBoy R., Kolonay J., McClarty G., Salzberg S.L., Eisen J., Fraser C.M.;
                                                                                                                                                                                                                                                                                                                                                26; Gaps
              Perret X.;
"Molecular basis of symbiosis between Rhizobium and legumes.";
Nature 387:394-401(1997).
-!- SIMILARITY: BELONGS TO THE SHORT-CHAIN DEHYDROGENASES/REDUCTASES
(SDR) FAMILY. HIGH, TO BACTERIAL FABG.
reiberg C.A., Fellay R., Bairoch A., Broughton W.J., Rosenthal
                                                                                                                                                                                                                                                                                                                       24.0%; Score 334; DB 1; Length 253; 34.2%; Pred. No. 1.7e-19; ive 55; Mismatches 92; Indels
                                                                                                                                                                                                                                                                                                                                               92; Indels
                                                                                                                                                                                                                                                                   NAD OR NADP (BY SIMILARITY).
BY SIMILARITY.
                                                                                                                                                                                                                                                                                              B8208A0B0F5F542F CRC64;
                                                                                                                                                                                                       Pfam; PF0105; adh short.
Pfam; PF00106; adh short; 1.
PRINTS; PR00080; SDRFAMILY.
PROSITE; PS00061; ADH SHORT; 1.
PROSITE; PS00061; ADH SHORT; 1.
PROSITE; PS00061; ADH SHORT; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             248 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          238 YLASDEAKYVSGHNLFIDGGFSV 260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FLASDLSAYVTGAVIDVNGGMLI 252
                                                                                                                                                                                  EMBL; AE000085; AAB91779.1; -.
                                                                                                                                                                                                                                                                                              253 AA; 25994 MW;
                                                                                                                                                                                                                                                                                                                                 Similarity 34.2
90; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A.
STRAIN=MOPn / Nigg;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FABG CHLMU
                                                                                                                                                                                                                                                                                   ACT SITE
SEQUENCE
                                                                                                                                                                                                                                                              ACT CT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 230
                                                                                                                                                                                                                                                                                                                                                                         11
                                                                                                                                                                                                                                                                                                                       Query Match
                                                                                                                                                                                                                                                                                                                                   Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Q9PKF7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 14
FABG_CHLMU
                                                                                                                                                                                                                                                                                                                                               Matches
g
                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                         ð
                                                                                                                                                                                                                                                                                                                                                                                                                      8
```

```
This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      127 LCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGIR 186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ||: | | | :: ||: ||: || |: : |: : ||: ||: ||: ||: ||: : ||: : ||: : ||: : ||: : ||: : ||: : ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     187 VNCLSPFGLPTALGKKFS-GIKNEEFFENVINFAGNLKG-PKFNV---EDVANAALYLAS 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DVTNEDGVKNAVDNTVSTYGKLDIMFSNAGIS-DPNRPRIIDNEKADFERVLSVNVTGVF 126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          5 LVNKAAIVTGGSRGIGFGIAKLFAEHGANVQIWGINEEAGKSAAQDLSDKTGSKVSFALV 64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          11 LEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGT---SNSTYIHC
                                                            pneumoniae AR39.";
Nucleic Acids Res. 28:1397-1406(2000).
Nucleic Acids Res. 28:1397-1406(2000).
-!- CATALYTIC ACTIVITY: (3R)-3-hydroxyacyl-[acyl-carrier protein] +
NADP(+) = 3-oxoacyl-[acyl-carrier protein] + NADPH.
-!- PATHWAY: Fatty acid biosynthesis pathway; first reduction step.
-!- SIMILARITY: Belongs to the short-chain dehydrogenases/reductases (SDR) family.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Bacteria; Profeobacteria, Gammaproteobacteria; Enterobacteriales;
Enterobacteriaceae; Salmonella.
NCBI_TaxID=602, 601;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Fatty acid biosynthesis; Oxidoreductase; NADP; Complete proteome. NP BIND 12 36 NADP (BY SIMILARITY). ACT. SITE BY SIMILARITY. SEQÜENCE 248 AA, 25977 WW; 1F5C8968CB05FF58 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB 1; Length 248;
"Genome sequences of Chlamydia trachomatis MoPn and Chlamydia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A.
SPECIES=S.typhimurium; STRAIN=LT2 / SGSC1412 / ATCC 700720;
MEDLINE=21534948; PubMed=11677609;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 98; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           23.9%; Score 332.5; DB 1 32.9%; Pred. No. 2.1e-19; ative 52; Mismatches 98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ā
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           01-OCT-1994 (Rel. 30, Created)
28-FBB-2003 (Rel. 41, Last sequence update)
15-SEP-2003 (Rel. 41, Last annotation update)
Oxidoreductase ucpA (EC 1. -. -)
UCPA OR STM2445 OR STY2682 OR T0413.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      263
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               InterPro, IPR002198; ADH_short.
Pfam; PF00106; adh short; 1.
PRINTS; PR00090; SDRFAMILY.
PROSITE; PS00061; ADH_SHORT; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            242 DEAKYVSGHNLFIDGGFS 259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EMBL; AE002319; AAF39350.1; -.
PIR; E81695; E81695.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Salmonella typhimurium, and Salmonella typhi.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STANDARD;
```

```
This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the FMBL outstation the Buropean Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A.
SPECIES=S. IVPhi; STRAIN=CT18;
SPECIES=S. IVPhi; STRAIN=CT18;
Barkhill J., Dougan G., James K.D., Thomson N.R., Pickard D., Wain J.,
Churcher C., Mungall K.L., Bentley S.D., Holden M.T.G., Sebaihia M.,
Baker S., Basham D., Brodes K., Chillingworth T., Connerton P.,
Cronin A., Davis P., Davies R.M., Dowd L., White N., Farrar J.,
Krogh A., Larsen T.S., Leather S., Moule S., O'Gaora P., Parry C.,
Whitehead S., Barrell B.G.,
Complete genome sequence of a multiple drug resistant Salmonella
enterica serovar Typhi CT18.",
Nature 413:848-852(2001):
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEGUENCE FROM N.A.
SPECIES=S, typhi; STRAIN=TY2 / ATCC 700931;
MEDLINE=25331367; PubMed=12644504;
Deng W., Liou S.-R., Plunkett G. III, Mayhew G.F., Rose D.J.,
Burland V., Kodoyianni V., Schwartz D.C., Blattner F.R.;
"Comparative genomics of Salmonella enterica serovar Typhi strains Ty2 and CT18.",
McClelland M., Sanderson K.E., Spieth J., Clifton S.W., Latreille P., Courtney L., Pervellik S., All J., Dante M., Du F., Hou S., Layman D., Leonard S., Nguyen C., Scott K., Holmes A., Grewal N., Milvaney E., Ryan E., Sun H., Florea L., Miller W., Stoneking T., Nhan M., Materston R., Wilson R.K.; Salmonella enterica serovar Typhimurium
                                                                                                                                                                                                                                                                                                                                                                                                 of two
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       T. Bacteriol. 185:2330-2337(2003).
-!- SIMILARITY: Belongs to the short-chain dehydrogenases/reductases
(SDR) family.
                                                                                                                                                                                                                                                                                                       SPECIES-S. typhimurium;
MEDLINE-91358362; PubMed=1909324;
Hryhiewicz M.W., Kredich N.M.;
Hryhiewicz M.W., Kredich N.M.;
"The cyst promoter of Salmonella typhimurium: characterization of binding sites for Cyst protein, studies of in vivo transcription initiation, and demonstration of the anti-inducer effects of thousing later.", Bacteriol. 173:5876-5886 (1991).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      23.8%; Score 332; DB 1; Length 26: 33.1%; Pred. No. 2.5e-19; ive 49; Mismatches 113; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                218 L -> M (IN REF. 2).
258 S -> T (IN REF. 2).
263 V -> I (IN REF. 2).
27870 MW, 01B26CAD984D534E CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EMBL, AECO8810; AALZ1339.1; --
EMBL, AECO8810; CANDO76'6.1; --
EMBL, AECO16835; AAO68131.1; --
FIR; A38121, A38121, A38121,
SVGene, SG10424; ucpA.
InterPro; IPR002198; ADH_short.
PRAINTS; PR00066; adh short.
PROSITE; PS00061; ADH_SHORT; FALSE_NGG,
OXIGORGAGE, COMPIECE DIORGE,

                                                                                                                                                                                                                                                                           SEQUENCE OF 204-263 FROM N.A.
                                                                                                                                                                                                                Nature 413:852-856(2001)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            155
218
258
258
263
263 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local S
Matches 87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ACT SITE
CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CONFLICT
```

Gaps

14;

Length 263;

Similarity 33.1 87; Conservative

```
VINEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFLC 128
                                                                                                           | : |: || : || | :: || |: || || CRDFASVQAAVARAKETEGRIDILVNNAGVCRLGNFLDMSEEDRDFH--IDINIKGVWNV 120
                                                                                                                                                                      129 MKHAARVMIPARSGNIISTASLSSTM-GGGSSHAYCGSKHAVLALTRNLAVELGQFGIRV 187
                                                                                                                                                                                              121 TKAVLPEMIKRKDGRIVMMSSVTGDMVADPGETAYALSKAAIVGLTKSLAVEYAQSGIRV 180
                                                                                                                                                                                                                                                      188 NCLSPFGLPTALGKKFSGIKNEEEFENVINFAG-----NLKGPKFNVEDVANAALYLAS 241
                                                                                                                                                                                                                                                                                 KLIGKTALITGASQGIGEGIARVFARHGANLILLDISDEIEKLADELGGRGHRCTAVKAD 62
RLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSN-STYIHCD
                                                                                                                                                                                                                                                                                                                                          242 DEAKYVSGHNLFIDGGFSVCNSV 264
                                                                                                                                                                                                                                                                                                                                                                  237 DESSYLTGTQNVIDGGSTLPESV 259
                                                                                   69
                                  g
                                                                                                                     g
                                                                                                                                                          ò
                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                  ŏ
                                                                                                                                                                                                                                                                                           Ωp
                                                                           8
                                                                                                                                                                                                                                                                                                                                     ò
```

completed: October 23, 2003, 12:48:56 he : 26 secs Search co Job time

```
October 23, 2003, 12:45:14 ; Search time 97 Seconds (without alignments) 726.272 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-09-673-918A-2
1393
1 MQLRTAFARRLEGKVALITG......IDGGFSVCNSVIKVFQYPDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             830525
GenCore version 5.1.6
Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             830525 segs, 258052604 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                sparchea:

sparchea:

sparchea:

sparchea:

sparchea:

sparchag:

sphuman:

spinvertebrate:

spinvertebrates:

spinvertebra
                                                                                                                                                                                                         OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Title:
Perfect score:
Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Database :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Searched:
                                                                                                                                                                                                                                                                                                             Run on:
```

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

					SUMMAKIES		
;		de (
Kesult No.	Score	Query	Query Match Length DB	DB	ID	Description	
-	1364	97.9	1 1 1	101	Q94KL7	O94kl7 forsythia i	
7	734	52.7		10	P93697	P93697 vigna unqui	
٣	700.5	50.3		10	094609		
4	695	49.9	274	10	банора	_	
2	693.5	49.8		10	094G10		
ė	685	49.2		10	050038	_	
7	677	48.6		10	082465	-	
œ	673	48.3		10	Q9SBD8		
6	670	48.1		10	Q9SBD6	,,,	
10	668	48.0		10	Q9SBD7	098bd7 ipomoea tri	
11	665.5	47.8		10	Q9SBM0	_	
12	658.5	47.3		10	Q9C826		
13	652.5	46.8		10	Q94KL8	094kl8 podophyllum	
14	625.5	44.9		10	ODSCO.	O9scu0 arabidopsis	
15	597.5	42.9		10	Q9ZR17		
16	593.5	42.6		10	Q93Y47	_	

ö

Gaps

. 0

Ouery Match 97.9%; Score 1364; DB 10; Length 277; Best Local Similarity 98.2%; Pred. No. 2.5e-95; Matches 267; Conservative 1; Mismatches 4; Indels 0;

ઠે a

91,435 arabidops 93.795 tripsacum 811.c2 oryza sat 811.c2 oryza sat 811.c8 oryza sat 811.c8 oryza sat 91.c9 oryza sat 91.c6 oryza sat 81.c6 organiza	AA. e update) ion update) (Fragment). Embryophyta; Tr dons; core eudi Forsythia. Fication, Cloni HUMAN HEALTH PR IN DEHYDROGENAE
Q9LW35 Q9LIC3 Q8LIC3 Q8LIC4 Q8LIC4 Q9LIC4 Q9LIC4 Q9LIC1 Q9LIC1 Q9LIC1 Q9LIC1 Q9LIC1 Q9LID5 Q8LIC1 Q9LID5 Q8LIC5 Q8LIC5 Q8LIC6 Q8LIC6 Q8LIC6 Q8LIC7 Q9LIC7 Q9LIC7 Q9LIC7 Q9LIC7 Q9LIC7 Q9LIC7 Q9LIC7 Q9LIC7 Q9LIC7 Q9SQF9 Q9	ALICNMENTS ALICNMENTS ated) t sequence t annotati roopinas troopinas tophyta; E udicotyled leaceae; F H.C., Dav mase Purif IONS FOR H 2001). SHORT-CHAI
00000000000000000000000000000000000000	PR P
	RX; 1. 19, 1. 19, 1. 19, 1. 19, 1. 19, 1. 19, 1. 19, 1. 19, 1. 19, 1. 10
0 m 0 0 m w w u 0 0 w u 0 w w w w u 0 w w w u 0 0 w u 0 0 w u 0 0 u 0 0 0 0	MINARY; BLrel. 19, C. BLrel. 19, L. Blrel. 23, L. idia (Border in plantae; Stre gnoliophyta; Is; Lamiales; I.A., Pelissie inol Dehydro
4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	PRELIM (TrEMB (T
	2001 1000
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	ALIGNMENT T. O94KL7 O94KL7 O1-DEC-2001 (TrEMBLrel. 19, Last sequency 01-DEC-2001 (TrEMBLrel. 19, Last sequency 01-DEC-2001 (TrEMBLrel. 19, Last sequency 01-DEC-2003 (TrEMBLrel. 19, Last sequency 01-MAR-2003 (TrEMBLrel. 23, Last annotat Stem secoisolariciresinol dehydrogenase Forsythia intermedia (Border forsythia) Eukaryota, Viridiplantae, Streptophyta; Stem secoisolariciresinol dehydrogenase Forsythia intermedia (Border forsythia) Eukaryota, Viridiplantae, Streptophyta; Stemstophyta; Magnoliophyta; eudicotyle Asteridae, lamiids; Lamiales; Oleaceae; NCBI TaxID=55183; SEQUENCE FROM N.A. MEDLINE=21201084; PubMed=11278426; Xia Z.Q., Costa M.A., Pelissiar H.C., Daxia Z.Q., TRROSISIO, AMX3665.1; - InterPro; IPROG189; AMX3665.1; - FRENT; PROG060; SERFAMILY. PROSTTE, PSOG061; ADH SHORT; 1. Oxidoraecacacacacacacacacacacacacacacacacacac
1 1 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	RESULT 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	REAL PROPERTY OF STANFORM STAN

N

Thu

```
овнорэ;
Овнорэ;
094G09
1D 094G09;
DT 01-DEC-
DT 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        d
                                                                                                                                                  185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              70 VTKEEDIEKCVDTAVSKFGKLDIMFNNAGTGDEFKKSILDNTKSDFERVISVNLVGPFLG 129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TKHAARVMIDARRGCIINTASVAGCIGGGATHAYTSSKHALVGLTKNTAVELGQFGIRVN 189
                                 STYIHCDVINEDGVKNAVDNIVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVFSVN 125
                                                                                                   181
                                                                                                                                                                                                 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  VINEDGVKNAVDNIVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFLC 128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                129 MKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRVN 188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CLSPFGLPTALGKKFSGIKNEEEFENVINFAGNLKGPKFNVEDVANAALYLASDEAKYVS 248
        STYIHCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVN 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          68
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   69
                                                                                                                                 QFGIRVNCLSPFGLPTALGKKFSGIKNEEEFENVINPAGNLKGPKFNVEDVANAALYLAS
                                                                                                      VTGVFLCMKHAARVMI PARSGNI I STASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELG
                                                                                                                                                                                                 OFGIRVNCLSPFGLPTALGKKFSGIKNEEFFENVINFAGNLKGPKFNVEDVANAALYLAS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   P3-297 (TEMBLEEL. 03, Created)
01-MAY-1997 (TEMBLEEL. 03, Last sequence update)
01-MAY-1997 (TEMBLEEL. 03, Last sequence update)
01-MAY-1997 (TEMBLEEL. 22, Last annotation update)
CPRD12 protein (Cowpea)
Vigna unguisculata (Cowpea)
Vigna unguisculata (Cowpea)
Spermatopphyta; Magnoliophyta; Embryophyta; Tracheophyta;
Spermatopphyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae;
eurosids I; Fabales; Fabaceae; Papilionoideae; Phaseoleae; Vigna.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9 RRLEGKVALITGGASGIGETTAKLFSQHGAKVALADVQDELGHSVVEAIGTSNSTYIHCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.

Tuchi S., Yamaguchi.-Shinozaki K., Urao T., Shinozaki K.,

"Characterization of two cDNAs for novel drought-inducible genes in the highly drought-tolerant cowpea.",

"D Plank Ress. 109:415-424(1996)

"I. Plank Ress. 109:415-424(1996)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 267;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (SDR) PAMILY.

EMBL, D88121; BAA13341.1; -.

INTERFY: D89292; 1HDC.

INTERFY: PRO0106; adh short.

PRON176; pro0060; adh short; 1.

PROSTITE; PS00601; ADH_SHORT; 1.

SEQUENCE 267 AA; 28484 MW; 8C4A48A2E9F41B64 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      52.7%; Score 734; DB 10; 56.3%; Pred. No. 1.1e-47; ive 41; Mismatches 67;
                                                                                                                                                                                                                                                                                                                                DEAKYVSGHNLFIDGGFSVCNSVIKVFQYPDS 277
                                                                                                                                                                                                                                                                                               DEAKYVSGHNLFIDGGFSVCNSVIKVFQYPDS 273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  267 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GHNLFIDGGFSVCNSVIKVFQ 269
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SHNLVIDGGLINSNVGFPMFE 266
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Best Local Similarity 56.3
Matches 147; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      249
                                                                                                      122
                                                                                                                                                                                                 182
                                                                                                                                                                                                                                             186
                                                                                                                                                                                                                                                                                            242
                                                                                                                                                                                                                                                                                                                                           246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Match
                                                                                                                                                                                                                                                                                                                                                                                                                g &
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                    q
                                                                                                                                                                                ò
                                                                                                                                                                                                                                  qq
                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                   임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PP
                                                                                           \delta
```

```
61 NSTYIHCDVINEDGVKNAVDNIVSTYGKLDIMFSNAGI--SDPNRPRIIDNEKADFERVL 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              119 SVNVTGVFLCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             179 ELGQFGIRVNCLSPFGLPTALGKKFSGIKNEEFFENVINFAGNLK-GPKFNVEDVANAAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 MOLRTAFARRIEGKVALITGGASGIGETTAKLFSOHGAKVAIADVODELGHSVVEAIGTS
                                                                                                                                                                                                                                                                                                       Cucumis sativus (Cucumber).
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons, core eudicots; Rosidae;
eurosids 1; Cucurbitales; Cucurbitaceae; Cucumis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Eukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta,
Spermatophyta, Magnoliophyta, eudicottsedons; core eudicots, Rosidae,
eurosida I, Fabales, Fabaceae, Papilionoideae, Phaseoleae, Phaseolus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A.
Sun J.-Q., Li Q.-Z., Li X.-G.;
Sun J.-Q., Li Q.-Z., Li X.-G.;
Sun J.-Q., Li Q.-Z., Li X.-G.;
Gene cloning and expression of CSG in cucumber.";
Submitted (JUL-2000) to the EMBL/GenBank/DBBJ databases.
-1. SIMILARITY: BELONGS TO THE SHORT-CHAIN DEHYDROGENASES/REDUCTASES
BANEL, AF286651; AAK83036.1; -.
ENTEL, AF286651; AAK83036.1; -.
PITHEPPO, IPRO02198; ADH short.
PERM: PRO00106; adh short; 1.
PRINTS: PRO0060; SDERAMIT, 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DB 10; Length 271;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match 50.3%; Score 700.5; DB 10; Length Best Local Similarity 53.7%; Pred. No.376-45. Matches 146; Conservative 44; Mismatches 75; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE FROM N.A.

Horiuchi J., Arimura G., Ozawa R., Muroi A., Takabayashi Nishioka T.;
"Phaseolus lunatus.";
Submitted (JUN-2002) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Oxidoreductase.
SEOUENCE 271 Aa; 28997 MW; 7CD6ED7F52AD6224 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Created)
Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Phaseolus lunatus (Lima bean) (Phaseolus limensis).
                                                                                                                                 Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               238 YLASDEAKYVSGHNLFIDGGFSVCNSVIKVFQ 269
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        239 YLGSDESKCVSGLNLIVDGGFTVVNQALCSFR 270
271 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         01-MAR-2003 (TrEMBLrel. 23,
01-MAR-2003 (TrEMBLrel. 23,
01-MAR-2003 (TrEMBLrel. 23,
Alcohol dehydroge.
                                                                                  01-DEC-2001 (TrEMBLrel. 19, 01-DEC-2001 (TrEMBLrel. 19, 01-MAR-2003 (TrEMBLrel. 23,
                                                                                                                                                                                                                    Sex determination protein. CSG.
PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          eurosids I; Faba
NCBI TaxID=3884;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 4
08H009
1D 08H00
AC 08H00
DT 01-MM
DT 01
```

m

238

g

a

ð

g

ò

g

ઠે

6

```
66 IFVHCNVAVESDVQNVVDATIAKFGKLDIMFSNAGIGGKSISSILDVDYDIIKTVFDVNI 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   126 VGAFFCAKHAAKVMIPFKKGSIIFTASAATVVSGIVPHAYSASKGAVLGFSKNIGVELGK 185
  179 ELGQFGIRVNCLSPFGLPTALGKKFSGIKNEEEFENVINFAGNLK-GPKFNVEDVANAAL 237
                          TYIHCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       123 TGVFLCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 183 FGIRVNCLSPFGLPTALGKKFSGIKNEEEFENVINFAGNLKGPKFNVEDVANAALYLASD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LRTAFARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TISSUE=Leaf;
MEDLINE=96145513; PubMed=8555446;
MEDLINE=96145513; PubMed=8555446;
"A simplified procedure for the subtractive cDNA cloning of photoassimilate-responding genes: isolation of cDNAs encoding a new class of pathogenesis-related proteins.";
Plant Mol. Biol. 29:1027-10138(1995).
-i- SIMILARITY: BELONGS TO THE SHORT-CHAIN DEHYDROGENASES/REDUCTASES
                                                                                                                                                                                                                                                                                                                                                                                                                        Nicotiana tabacum (Common tobacco)
Sukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; eudicotyledons; core eudicots;
Asteridae; lamids; Solanales; Solanaceae; Nicotiana.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 284;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 83; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     to the EMBL/GenBank/DDBJ databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      284 AA; 29819 MW; BD884E9013FB63E9 CRC64;
                                                                                                                                                                                                                                                                                                       (TrEMBLrel. 06, Created)
(TrEMBLrel. 06, Last sequence update)
(TrEMBLrel. 23, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             49.2%; Score 685; DB 10;
53.8%; Pred. No. 5.9e-44;
ive 37; Mismatches 83;
                                                                                                                     239 YLGSDESKCVSGLNLIVDGGFTVVNQALCSFR 270
                                                                                          238 YLASDEAKYVSGHNLFIDGGFSVCNSVIKVFQ 269
                                                                                                                                                                                                                                                              Ź
                                                                                                                                                                                                                                                                                                                           01-JUN-1998 (TrEMBLrell. 06, Last & Oll-WAR-2003 (TrEMBLrell. 23, Last at Short chain alcohol dehydrogenase. SCANT.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DSKYVSGMNLVIDGGFSTTN 265
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 243 EAKYVSGHNLFIDGGFSVCN 262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        HSSP, P19992; 1HDC.
InterPro; IPR002198; ADH_short.
Pfam; PF00106; adh_short; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRINTS; PR00080; SDRFAMILY.
PROSITE; PS00061; ADH SHORT; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EMBL; AJ223178; CAA11154.1; -. EMBL; AJ223177; CAA11153.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Best Local Similarity 53.8% Matches 140; Conservative
                                                                                                                                                                                                                                                              PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Submitted (DEC-1997)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (SDR) FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NCBI_TaxID=4097;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Oxidoreductase
                                                                                                                                                                                                                                                                                                            01-JUN-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TISSUE=Leaf;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Moenke G.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               m
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
                                                                                                                                                                                                                                                              050038
                                                                                                                                                                                                             RESULT (
                                         g
                                                                                                                                      셤
                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              gg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        qq
  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           4
                                                                                                                  2
                                                                                                                                                                                                                                                                                                                                                                                                                                                   244
                                                                                                                                                                                                                                                                                                                                                      184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61 NSTYIHCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGI--SDPNRPRIIDNEKADFERVL 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SVNVTGVFLCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAV 178
                                                                                                                                                                                                                                                         IHCDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTG 124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             181
                                                                                                                                                                 64
                                                                                                                                                                                                             65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   62
                                                                                                                                                                                                                                                                                    126 PFLGTKHAARVMIPAKRGCIINTSSIAGCRĢTGSPHAYVVSKHGLEGLTKNTAVELGQFG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           5 TAFARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTY
                                                                                                                                                                                         VFLCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFG
                                                                                                                                                                                                                                                                                                                                                                                                                                                IRVNCLSPFGLPTALGKKFSGIKNEEFFENVINFAGNLKGPKFNVEDVANAALYLASDEA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Cucumis sativus (Cucumber).

Bukaryota, Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae; euroaids I; Cucurbitales; Cucurbitaceae; Cucumis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 MOLRTAFARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             3 IQLLPAIARRLEGKVAVITGGARGIGEQTAKLFFKHGAKVVIADIQDHLGQTLCKDLGQS
                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE FROM N.A.

Sun J.-Q., Li Q.-Z., Li X.-G., Zhang X.-S.;

"Gene cloning and expression of CTA in cucumber.";

"Submitted (JUL.2000) to the EMBL/GenBank/DDBJ databases.
-!- SIMILARITY: BELONGS TO THE SHORT-CHAIN DEHYDROGENASES/REDUCTASES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                  9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       49.8%; Score 693.5; DB 10; Length 271; 53.3%; Pred. No. 1.3e-44;
                                                                    Length 274;
                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      75; Indels
EMBL; AB086038; BAC53872.1; -.
SEQUENCE 274 AA; 28862 MW; DEC858BDB324877F CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         271 AA; 28931 MW; 8C5C5603CCCB49B4 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Last sequence update)
Last annotation update)
                                                                                                              69;
                                                                    10;
                                                                  49.9%; Score 695; DB 10;
54.8%; Pred. No. 9.9e-45;
ive 42; Mismatches 69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            271 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        53.3%; Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (SDR) FAMILY.

EMBL; AF266650; AAK83035.1; -
InterPro; IPR002198; ADH short.

Pfam; PF0106; adh short; 1.

PRINTS; PR00080; SDRFAMILY.

PROSITE; PS00061; ADH SHORT; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      242 NYVSGHSLLLDGGYTITNA 260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           KYVSGHNLFIDGGFSVCNS 263
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (TrEMBLrel. 19, C
(TrEMBLrel. 19, I
(TrEMBLrel. 23, I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Best Local Similarity 53.3
Matches 145, Conservative
                                                                                                                Matches 142; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRELIMINARY;
                                                                                          Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Oxidoreductase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        01-DEC-2001 (
01-DEC-2001 (
01-MAR-2003 (
                                                                                                                                                                                                                                                         65
                                                                                                                                                                                                                                                                                                     99
                                                                                                                                                                                                                                                                                                                                                    125
                                                                                                                                                                                                                                                                                                                                                                                                                                                   185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          122
                                                               Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  094G10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Q94G10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 5
09461
1D 09463
AC 09463
DT 01-DB
DT 01-DB
DT 01-MB
DT 01-MB
DT 01-MB
DT 01-MB
DT 01-MB
DT 01-MB
DE CTA.

OC BUKAL
OC BUK
```

ö

Gaps

..

62

182

g

g

ò

8

```
SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          [pomoea trifida
                                                                                                                                                                                                                                                                                                                                    SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        908S60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 9
       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  71 DVRIESDVQNAVDTTVSRYGKLDIMFSNAGVAGSRDTSILEASPENINLVFETNVFGAFF 130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DVINEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFL 127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRV 187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NCLSPFGLPTALGKKFSGIKNEEEFENVINFAGNLKGPKFNVEDVANAALYLASDEAKYV 247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8 ARRLEGKVALITGGASGIGETTAKLFSOHGAKVALADVODELGHSVVEAIGTSNSTYIHC
                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.

Kowyama Y., Kadota N., Sassa H., Kakeda K., Tsuchiya T., Ishimizu T.,

Kondo K., Norioka S.;

"S-locus specific stigma protein (SSP) from sporophytic self-
incompatibility plant, Ippomoea trifida, is a member of short-chain
alcohol dehydrogenase family.";

Submitted (JUN-1998) to the EMBL/GenBank/DDBJ databases.

-!- SIMILARIY: BELONGS TO THE SHORT-CHAIN DEHYDROGENASES/REDUCTASES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ipomoea trifida.
Bukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta,
Spermatophyta, Magnoliophyta, eudicotyledons, core eudicots;
Asteridae, lamiida, Solanales, Convolvulaceae, Ipomoea.
VCHI_TaxID=35884;
                                                                                                                                                                                                                                            Eŭkaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots;
Asteridae; lamiids; Solanales; Convolvulaceae; Ipomoea.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          tch 48.6%; Score 677; DB 10; Length 284; al Similarity 51.9%; Pred. No. 2.4e-43; 135; Conservative 41; Mismatches 84; Indels C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  284 AA; 29823 MW; 4C04A888178C0633 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    01-MAY-2000 (TrEMBLrel. 13, Created)
01-MAY-2000 (TrEMBLrel. 13, Last sequence update)
01-DBC-2001 (TrEMBLrel. 19, Last annotation update)
Short-chain alcohol dehydrogenase.
                                                                                                                                01-NOV-1998 (TrEMBLrel. 08, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
Short-chain alcohol dehydrogenase.
                                                                      284 AA
                                                                                                                 Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SCHNLFIDGGFSVCNSVIKV 267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SGLNLLIDGGFTTTNIAFOV 270
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EMBL, AF07247; AAC35340.1; -.
HSSP, P19992; 1HDC.
INTERPRO, IPR002198; ADH Short.
Pfam, PF00106; adh Short; 1.
PRINTS; PR00080; SDRFAMILY.
Oxidoreductase.
                                                                                                            01-NOV-1998 (TrEMBLrel. 08, 01-NOV-1998 (TrEMBLrel. 08,
                                                                      PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRELIMINARY;
                                                                                                                                                                                                                                                                                                     NCBI_TaxID=35884;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (SDR) FAMILY.
                                                                                                                                                                                                                             Ipomoea trifida
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local S
Matches 135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       68
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Q9SBD8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 8
908008
100 0988
AC 0988
AC 0958
DT 01-M
DT 01-I
DE SP0
GN SSP0
CC EUK
CC SPC

                           RESULT 7
082465
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Dp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
```

```
132 AKHAARVMIPARKGSVIFSASAASEVFGITSDTYTASKCAVVGLCKSLCVEMGKYGIKAN 191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       189 CLSPFGLPTALGKKFSGIKNEEEFENVINFAGNLKGPKFNVEDVANAALYLASDEAKYVS 248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               69 VINEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFLC 128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           129 MKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRVN 188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   68
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (1) = SEQUENCE FROM N.A.

ROWSHIP Y., Kadeta N., Sassa H., Kakeda K., Teuchiya T., Ishimizu T., Kowyama Y., Kadeta N., Sassa H., Kakeda K., Teuchiya T., Ishimizu T., Kowyama Y., Kadeta N., Sassa H., Kakeda K., Teuchiya T., Ishimizu T., Komyama Y., Norioka S.;

Komdo K., Norioka S.;

Trincompatibility plant, Ipomoea trifida, is a member of short-chain incompatibility plant, Ipomoea trifida, is a member of short-chain trincompatibility plant, Ipomoea trifida, is a member of short-chain tricompatibility plant, Ipomoea trifida, is a member of short-chain tricompatibility plant, Ipomoea trifida, is a member of short-chain tricompatibility plant, Ipomoea trifida, is a member of short-chain tricompatibility plant, Ipomoea trifida, is a member of short-chain tricompatibility plant, Ipomoea trifida, is a member of short-chain tricompatibility plant, Ipomoea trifida, is a member of short-chain tricompatibility plant, Ipomoea trifida, is a member of short-chain tricompatibility plant, Ipomoea trifida, is a member of short-chain tricompatibility plant, Ipomoea trifida, is a member of short-chain tricompatibility plant, Ipomoea trifida, is a member of short-chain tricompatibility plant, Ipomoea trifida, is a member of short-chain tricompatibility plant, Ipomoea trifida, is a member of short-chain tricompatibility plant, Ipomoea trifida, is a member of short-chain tricompatibility plant, Ipomoea trifida, is a member of short-chain tricompatibility plant, Ipomoea trifida, is a member of short-chain tricompatibility plant, Ipomoea trifida, Ipo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9 RRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTYIHCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Kowyama Y., Kadota N., Sassa H., Kakeda K., Tsuchiya T., Ishimizu T., Kowyama Y., Kadota N., Sassa H., Kakeda K., Tsuchiya T., Ishimizu T., Komfo K., Norioka S.;

"S-locus specific stigma protein (SSP) from sporophytic self-incompatibility plant, Ipomoea trifida, is a member of short-chain alcohol dehydrogenase family.";

Submitted (JuN-1998) to the EMBL/GenBank/DDBJ databases.

SIMILARITY: BELONGS TO THE SHORT-CHAIN DEHYDROGENASES/REDUCTASES (SDR) FAMILY.

HSSP; P19922; HHCC.

InterPro; IPRO2198; ADH short.

Pfam; PRO0106; adh short.

PRINTS; PRO0000; SDRPAMILY.

Oxidoceductase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Eŭkaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Asteridae; lamida; Solanales; Convolvulaceae; Ipomoea. NCBI_TaxID=35884;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 277;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match

48.3%; Score 673; DB 10; Length 2'
Best Local Similarity 51.7%; Pred. No. 4.6e-43;
Matches 134; Conservative 42; Mismatches 83; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                277 AA; 29312 MW; 7A75BEF12A73D9AE CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      249 GHNLFIDGGFSVCNSVIKV 267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    252 GLNLLIDGGFTTTNTAFOV 270
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRELIMINARY;
```

188 191 248

٠,

```
12 KRLEGKVAIITGAANGIGATTARLFAOHGCKVIIADIDDKNGLSVAEEIGPEYALFIHCD
                            VTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFLC
                                                                                     129 MKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRVN
                                                                                                                                                CLSPFGLPTALGKKFSGIKNEEEFENVINFAGNLKGPKFNVEDVANAALYLASDEAKYVS
                                                                                                                                                                                                                                                                                                                                                                                                                                    Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae;
eurosids I; Cucurbitales; Cucurbitaceae; Citrullus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "Cloning of three glbberellin-regulated CDNAs from watermelon during early seed development: down-regulated one CDNA and up-regulated two
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Submitted (OCT-1998) to the EMBL/GenBank/DDBJ databases.
-!- SIMILARITY: BELONGS TO THE SHORT-CHAIN DEHYDROGENASES/REDUCTASES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A.
Kim J., Kang H., Jun S., Lee J., An G.;
"Cloning of three gibberellin-regulated cDNAs from watermelon
                                                                                                                                                                                                                                                                                                                                                                                                                      Citrullus lanatus (Watermelon) (Citrullus vulgaris).
                                                                                                                                                                                                                                                                                                                                                           Last sequence update).
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       47.8%; Score 665.5; DB 1051.1%; Pred. No. 1.7e-42; ive 48; Mismatches 74
                                                                                                                                                                                                                                                                                                                  Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             272
                                                                                                                                                                                                                                                                                                                 273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             YVSCHNLFIDGGFSVCN-SVIKVFQYPD
                                                                                                                                                                                                                                                                                                                                              Created)
                                                                                                                                                                                                                                                                                                                 PRT;
                                                                                                                                                                                                          GHNLFIDGGFSVCNSVIKV 267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             InterPro; IPR02198; ADH short.
Pfam; PF00106; adh short; 1.
PRINTS; PR00080; SDRFAMILY.
                                                                                                                                                                                                                           | || |||||: |: :|
GLNLLIDGGFTTTNTAFQV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (SDR) FAMILY.
EMBL; AB018559; BAA89230.1;
HSSP; P19992; 1HDC.
                                                                                                                                                                                                                                                                                                                            Q9SBMO;
01-MAY-2000 (TrEMBLrel. 13,
01-MAY-2000 (TrEMBLrel. 13,
01-DEC-2001 (TrEMBLrel. 19,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Best Local Similarity 51.19
Matches 137; Conservative
                                                                                                                                                                                                                                                                                                                 PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NCBI_TaxID=3654;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Oxidoreductase.
                            69
                                                        72
                                                                                                                                                189
                                                                                                                                                                            192
                                                                                                                                                                                                          249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
                                                                                                                                                                                                                                                                                                                 O9SBM0
                                                                                                                                                                                                                                                                                                                                                                                        Wts2L.
                                                                                                                                                                                                                                                                                     1
                                                                                                                                                                                                                                                                                   RESULT
                                                                                                                                                                                                                                                                                                   OMES60
                                                                                                                                                                                                                                                                                                                               ò
                                                CP
                                                                             8
                                                                                                             엄
                                                                                                                                               ò
                                                                                                                                                                         g
                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                   ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                          ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ö
                                                                                                                               VTNEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFLC 128
                                                                                                                                                MKHAARVMI PARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRVN 188
                                                                                                                                                                                                          CLSPFGLPTALGKKFSGIKNEEEFENVINFAGNLKGPKFNVEDVANAALYLASDEAKYVS 248
                                                                                                                                                                                                                                                                     71
                                                                                                  KRLEGKVAIITGAANGIGATTARLFAQHGCKVIIADIDDKNGHSVAEBIGPEYALFIHCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTYIHCD
                                                                    9 RRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTYIHCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STRAIN=H77-2;
Tsuchiya T., Suwabe K., Watase T., Kagaya Y., Kowyama Y.;
Tsuchiya T., Suwabe K., Watase T., Kagaya Y., Kowyama Y.;
"Characterization of promoter region of the SSP gene from Ipomoea
trifida regulates stigma-specific expression.";
Submitted (Aug-2001) to the EMBL/GenBank/DDBJ databases.
-!-SIMILARITY: BELONGS TO THE SHORT-CHAIN DEHYDROGENASES/REDUCTASES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Kowyama Y., Kadota N., Sassa H., Kakeda K., Tsuchiya T., Ishimizu T
Kondo K., Norioka S.;
"S-locus specific stigma protein (SSP) from sporophytic self-
incompatibility plant, Ipomoea trifida, is a member of short-chain
alcohol dehydrogenase family.";
Submitted (JUN-1998) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ipomoea trifida.
Eukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta,
Spermatophyta, Magnoliophyta, eudicotyledons; core eudicots;
Asteridae, lamiids, Solanales, Convolvulaceae, Ipomoea.
                                          .
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match 48.0%; Score 668; DB 10; Length 2 Best Local Similarity 51.7%; Pred. No. 1.1e-42; Matches 134; Conservative 41; Mismatches 84; Indels
                                          84; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                             01-MAY-2000 (TrEMBLrel. 13, Created)
01-MAY-2000 (TrEMBLrel. 13, Last sequence update)
01-JUN-2002 (TrEMBLrel. 21, Last annotation update)
Short-chain alcohol dehydrogenase (S-locus linked stigma
              Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 277 AA; 29257 MW; A0CDB434B31C666D CRC64;
          Score 670; DB 10;
Pred. No. 8.1e-43;
41; Mismatches 84;
                                                                                                                                                                                                                                                                                                                                                                                                                    277 AA
                                                                                                                                                                                                                                                                                                                                                                                                                   PRT;
                                                                                                                                                                                                                                                                                                              GHNLFIDGGFSVCNSVIKV 267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      HSSP; P19992; 1HDC.
InterPro; IRR003198; ADH short.
Pfam; PF00106; adh short; I.
PRINTS; PR00080; SDRFAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EMBL; AF072449; AAC35342.1; -. EMBL; AB070221; BAB86916.1; -.
                                                                                                                                                                                                                                                                                                                                          GLNLLIDGGFTTTNIAFQV
            48.1%;
                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                    PRELIMINARY;
                        Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (SDR) FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NCBI_TaxID=35884;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Oxidoreductase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SSP OR SSP10
                                        134;
                                                                                                                               69
                                                                                                                                                                                         129
                                                                                                                                                                                                                                                                                                                                          252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          σ
                                                                                                  12
                                                                                                                                                                                                                                                    189
                                                                                                                                                                                                                                                                                192
                                                                                                                                                                                                                                                                                                              249
         Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            protein)
                                                                                                                                                                                                                                                                                                                                                                                                                   Q9SBD7
                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                     RESULT 10
                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                  g
                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                        g
                                                                                                                            ò
                                                                                                                                                                              ર્જ
                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                            8
```

4. 245 69 VINEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFLC 128 129 MKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRVN 188 130 AKHAARVMIPEKNGCILFTSSATTNIAGLSSHPYAASKCAVLGLVRNLAAELGQHGIRVN 189 68 69 CLSPFGLPTALGKKFSGIKN----EEFFENVINFAGNLKGPKFNVEDVANAALYLASDEAK 9 RRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTYIHCD 6 DB 10; Length 273; Indels 273 AA; 28835 MW; 904A835DDD52B6E2 CRC64; 246 YVSGLNLVVDGGYSVVNPTMLKTLKLMD 273

```
П
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                      ð
                                                                                                                                              g
                                                                                                                                                                                        ò
                                                                                                                                                                                                                                    Db
                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                g
               à
                                                                                                                                                                                                                                                                                                      SEQUENCE FROM N.A.

Nguyen M., Karlin-Neumann G., Southwick A., Lam B., Miranda M.,

Nguyen M., Karlin-Neumann G., Southwick A., Lam B., Miranda M.,

Palm C.J. Bowser L., Jones T., Bah J., Carninci P., Chen H.,

Cheuk R., Chung M.K., Hayashizaki Y., Ishida J., Kamiya A., Kawai J.,

Kim C., Lin J., Liu S.X., Narraska M., Pham P.K., Sakano H.,

Sakurai T., Satou M., Seki M., Shinn P., Yamada K., Shinozaki K.,

Ecker J., Theologis A., Davis R.W.,

Submitted (Apr. 2002) to the EMBL/GenBank/DDBJ databases.

-I- SIMILARITY: BELONGS TO THE SHORT-CHAIN DEHYDROGENASES/REDUCTASES

(SDR) FAMILY.
                                                                                                                      dehydrogenase/reductase).
F19K6.3 OR AR1G52340.
Arabidopsis thaliana (Mouse-ear cress).
Bukaryota; Viridiplantae, Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae;
eurosids II; Brassicales; Brassicaceae; Arabidopsis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE FROM N.A.
Cheng W.-H., Endo A., Zhou L., Penney J., Chen H.-C., Arroyo A.,
Leon P., Nambara E., Asami T., Seo M., Koshiba T., Sheen J.;
I., Nambara E., Asami T., Seo M., Koshiba T., Sheen J.;
I., an inque short-chain dehydrogenase/reductase in Arabidopsis glucose
signaling and abscisic acid biosynthesis and functions.";
Submitted (MAR-2002) to the EMBL/Genbank/pDBJ databases."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               47.3%; Score 658.5; DB 10; Length 285; ilarity 50.9%; Pred. No. 6e-42; Conservative 43; Mismatches 78; Indels 13;
                                    01-070-2001 (TrEMBLrel. 17, Created)
01-070-2001 (TrEMBLrel. 17, Last sequence update)
01-077-2002 (TrEMBLrel. 22, Last annotation update)
Short chain alcohol dehydrogenase, putative (Short-chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EMBL; AC021424; AAG51536.1; -.
EMBL; AC02244; AAL99237.1; -.
EMBL; AX082345; AAL99237.1; -.
EMBL; AX082345; AAL99238.1; -.
EMBL; AX082043; AAM20454.1; -.
HSSP; P2932; 1DFI.
INTECPPO; IPRO02198; ADH short.
PERMYS; PR00080; SDRFAMILY.
PROSTITE; PS00061; ADH_SHORT; 1.
PROSTITE; PS00061; ADH_SHORT; 1.
SROUTH SECTION STORM SHORT; 1.
SROUTH SECTION STORM SHORT; 1.
SROUTH SECTION STORM SHORT; 1.
285 AA.
PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Nature 408:816-820(2000)
  PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local Similarity
Matches 139; Conserv
     AND DESCRIPTION OF STREET STRE
```

5,

Gaps

13;

```
129 MKHAARVMIPARSGNIISTASLSS-TMGGGSSHAYCGSKHAVLALTRNLAVELGOFGIRV 187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     69 VINEDGVKNAVDNIVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFLC 128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NCLSPFGLPTALGKKFSGIKNEEEFENVINFAGNLKGPKFNVEDVANAALYLASDEAKYV 247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               251
                                                                                                                                                                                                                                                                                                                                                                                        183
                                                                                                                                                                                                                                                                                                                                                                                                                                                       64 YIHCDVINEDGVKNAVDNIVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVT 123
                                                                                                                                                                                                                                                                GIRVNCLSPFGLPTALGKKFSGIKNEEEFENVI----NFA---GNLKGPKFNVEDVANAA 236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               68
                                                                                     74
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               10 RLEGKVALITGGASGIGETTAKLFSQHGAKVALADVQDELGHSVVEAIGTSN-STYIHCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              15 SQRLLGKVALITGGATGIGESIVRLFHKHGAKVCIVDLQDDLGGEVCKSLLRGESKETAF
ARRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAI--GTSNST--
                                                                                                                                                                                                                                                                                                                                                                                        124 GVFLCMKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGOF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE=21201084; PubMed=11278426;
Xia Z.Q., Costa M.A., Pellssier H.C., Davin L.B., Lewis N.G.;
Xia Z.Q., Costa M.A., Pellssier H.C., Davin L.B., Lewis N.G.;
Xia Z.Q., Costa M.A., Pellssier H.C., Davin L.B., Lewis N.G.;
Secoisolaricizemiol Dehydrogenase Purification, Cloning, and
Functional Expression. IMPLICATIONS FOR HUMAN HEALTH PROTECTION.";
J. Biol. Chem. 276-12614-12623(2001)
J. Biol. Chem. 276-12614-12623(2001)
J. SIMILARITY: BELONGS TO THE SHORT-CHAIN DEHYDROGENASES/REDUCTASES
EMBL, AP352734; AAX38664.1;
InterPro; IPR002029; AbL short.
InterPro; IPR001298; AbL short.
InterPro; IPR00106; adh short;
IPROSITE; PR00106; adh short;
PROSITE; PR00106; ADH SHORT;
IPROSITE; PR00106; ADH 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  01-DEC-2001 (TrEMBLrel. 19, Created)
01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
01-MAR-2003 (TrEMBLrel. 13, Last annotation update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
Nitzome secoisolariciresinol dehydrogenase (Fragment).
Podophyllum peltatum (Mayapple).
Bukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Berberidaceae; Magnollophyta; eudicotyledons; Ranunculales;
111 TaxID=35933;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
46.8%; Score 652.5; DB 10; Length 278;
Best Local Similarity 52.2%; Pred. No. 1.7e-41;
Matches 133; Conservative 43; Mismatches 76; Indels 3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Oxidoredutase.

NON TER 278 AA; 29253 MW; DB735A376E112375 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      237 LYLASDEAKYVSGHNLFIDGGFSVCNSVIKVFQ 269
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               253 LFLASDDSRYISGDNLMIDGGFTCTNHSFKVFR 285
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       278 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
```

```
F4C21.6 OR AT4G03140.
                                                                                                                                                                                                                                                                                                    Preston R., Ca]
McCombie W.R.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Oxidoreductase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Search co
g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             : | | | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ---YIHÇDVTNEDGVKNAVDNTVSTYGKLDIMFSNAGI--SDPNRPRIIDNEKADFERVL 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               146 RVNVRGVGLGMKHGARAMIKRGFKGCIISTASVAGVMGGMGPHAYTASKHAIVGLTKNAA 205
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SVNVTGVFLCMKHAARVMIP-ARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLA 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VELGOFGIRVNCLSPFGLPTAL----GKKFSG--IKNE--EEFENVINFAGNLKGPKFNV 229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TAFARRIEGKVALITGGASGIGETTAKLFSOHGAKVAIADVODELGHSVVEAIGTSNST-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Arabidopsis thaliana (Mouse-ear cress).
Eukaryota, Viridiplantae, Streptophyta; Embryophyta, Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosidae;
eurosids II; Brassicales; Brassicaceae; Arabidopsis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EU Arabidopsis sequencing project,
Submitted (DEC-1999) to the EMBL/GenBank/DDBJ databases.
-!- SIMILARITY: BELONGS TO THE SHORT-CHAIN DEHYDROGENASES/REDUCTASES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  H.W.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           / Match 44.9%; Score 625.5; DB 10; Length 303; Local Similarity 47.5%; Pred. No. 2e-39; Nes 131; Conservative 52; Mismatches 78; Indels 15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Deleeny M., Berger C., Cooke R., Grellet F., Laudie M., Mewes
Lemcke K., Mayer K.F.X., Quetier F., Salanoubat M.;
Submitted (NOV-1999) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           303 AA; 32151 MW; DC1BD28DABE38DD6 CRC64;
                                                                                                                                                                                                                                                                                                                                01.MAY-2000 (TrEMBLrel. 13, Created)
01.MAY-2000 (TrEMBLrel. 13, Last Sequence update)
01-0CT-2002 (TrEMBLrel. 22, Last annotation update)
Short-chain alcohol dehydrogenase-like protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Created)
Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     230 EDVANAALYLASDEAKYVSGHNLFIDGGFSVCNSVI 265
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        303 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   T18N14.60.
Arabidopsis thaliana (Mouse-ear cress)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (SDR) FAMILY.
EMBL, AL132968; CAB63154.1; ...
HSSP; P19992; IHDC.
InterPro; IPR002198; ADH_short.
Ffam; PF00106; adh short; IPRINTS; PR00080; SDRFAMILY.
FROSITE; PS00061; ADH_SHORT; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      01-MAY-1999 (TrEMBLrel. 10, Cre
01-MAY-1999 (TrEMBLrel. 10, Las
01-MAR-2003 (TrEMBLrel. 23, Las
Putative alcohol dehydrogenase.
                                                               SGLNLVIDGGYTRIN 266
                            SCHNLFIDGGFSVCN
                                                                                                                                                                                                                                                                 PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NCBI_TaxID=3702;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Oxidoreductase.
                        248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          092R17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 15
Q9ZR17
ID Q9ZR1
AC Q9ZR1
DT 01-MA
DT 01-MA
DE Putat
                                                                                                                                                                                          RESULT 14
09SCU0
10 POSCU0
DT 01-MP
DT 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ठे
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
```

```
69 VINEDGVKNAVDNTVSTYGKLDIMFSNAGISDPNRPRIIDNEKADFERVLSVNVTGVFLC 128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            129 MKHAARVMIPARSGNIISTASLSSTMGGGSSHAYCGSKHAVLALTRNLAVELGQFGIRVN 188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CLSPFGLPTA-----LGKKFSGIKNEEEFENVINFAGNLKGPKFNVEDVANAALYLASDE 243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Spiegel L.A., Huang E.N., Nascimento L.U., de la Bastide M., Vil D.M., Preston R.R., Matero A., Shah R., O'Shaughnessy A., Rodriguez M., Shekher M., Schutz K., See L.H., Swaby I., Habermann K., Dedhia N.N., Mawes H.W., Lemcke K., Mayer K.F.X., Submitted (MAR-2000) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   9 RRLEGKVALITGGASGIGETTAKLFSQHGAKVAIADVQDELGHSVVEAIGTSNSTYIHCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Arabidopsis thaliana (Mouse-ear cress).
Eukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta;
Spermatophyta, Magnoliophyta, eudicotyledons, core eudicots, Rosidae, eurosids II; Brassicales, Brassicaceae, Arabidopsis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EU Arabidopsis sequencing project;
Submitted (MAR-2000) to the EMBL/GenBank/DDBJ databases.
-!- SIMILARITY: BELONGS TO THE SHORT-CHAIN DEHYDROGENASES/REDUCTASES
                                                                                                                                                                                                                                                                                                                          "Arabidopsis thaliana BAC F4C21 from chromosome IV near 17 cM."; Submitted (FEB-1999) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                              Habermann K., de la Bastide M., Huang E.N., Gnoj L., Schutz K.
Preston R., Calma C., Martienssen R., Parnell L.D., Dedhia N.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DB 10, Length 283;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      283 AA; 29994 MW; 93B0A97CECC859BC CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   .4e-37;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               42.9%; Score 597.5;
47.0%; Pred. No. 2.4e
:ive 45; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                completed: October 23, 2003, 12:50:40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    244 AKYVSGHNLFIDGGFSVCNSVIKVFQYP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EMBL; AC005275; AAD1442.1; -.
EMBL; AL16196; CAB77799.1; -.
HSSP; P19922; 1HDC.
InterPro; IPR002198; ADH_short.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Pfam, PF00106; adh short; 1.
PRINTS; PR00080; SDRFAMILY.
PROSITE; PS00061; ADH_SHORT; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Best Local Similarity 47.03
Matches 126, Conservative
                                                                                                                                                                                                SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (SDR) FAMILY.
                                                                                                                                 NCBI_TaxID=3702;
```

THIS PAGE BLANK (USPTO)